



LACUS FORUM XXXIII

Variation



UNIVERSITY OF
TORONTO

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**LACUS
FORUM
XXXIII**

Variation

LACUS Forum 33 Referees

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David Bennett
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Patrick Duffley
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Shin Ja Hwang



Sydney Lamb
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Alan Melby
Keren Rice



Bill Spruiell
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Lucas van Buuren



LACUS FORUM XXXIII

Variation

Edited by

**Peter Reich,
William J. Sullivan,
Arle R. Lommel &
Toby Griffen**



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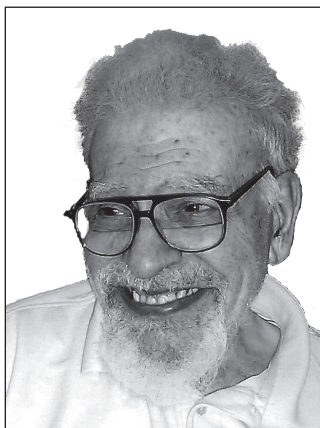
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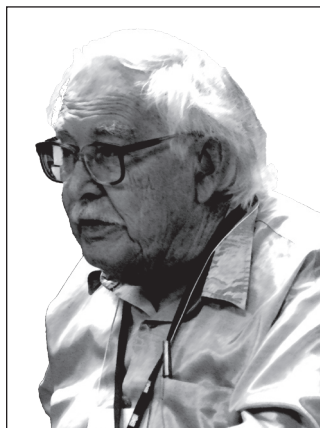
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Whereas the three grand loyal octogenarians of LACUS have been stalwarts of the organization for more than thirty years, presenting and publishing their research, imparting their insights, inspiration, and encouragement to LACUS colleagues, and serving as presidents of LACUS, LACUS Forum XXXIII is dedicated, with gratitude and affection, to Saul Levin, Robert Longacre, and Victor Yngve. 🐙



Saul Levin



Robert Longacre



Victor Yngve

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PREFACE

THE THIRTY-THIRD LACUS FORUM was held July 31 through August 4, 2006 at the University of Toronto, in Toronto, Ontario. The conference theme was Variability.

The inaugural lecture was presented by Dennis Preston of Michigan State University on 'Why don't you understand your own language?' Three invited lectures highlighted research of four professors at the University of Toronto on various dialectal issues. The paper by Ron Smyth and Henry Rogers, entitled 'Questions and controversies in the study of "gay speech"', reviewed the research that attempted to understand why the speech of many gay men can be identified as gay by other gay men. The paper by Sali Tagliamonte, entitled 'Variation in English in Toronto neighbourhoods,' found that, although there is remarkable uniformity within Toronto neighborhoods compared to neighborhoods in the much older cities in Great Britain, careful analysis shows that even in Toronto there are some subtle differences. The third paper was by Jack Chambers, entitled 'Dialect difference in the Niagara Peninsula.' Jack Chambers was born in this region, west of Toronto, and to honour his major linguistic work and his recent retirement, we chartered a bus and traveled to the Rockway Glen Golf Course and Estate Winery in St. Catharines, Ontario, near Jack's birthplace. There we toured a wine-making museum, had dinner, and heard his excellent presentation on such local dialect variants as the 'positive anymore', as in 'Most people buy SUVs anymore'.

The banquet was held at the George Brown School of Hospitality and Tourism, where students of the school prepared and served an excellent feast. Music at the banquet was provided by F0, a group of musicians composed of professors and graduate students at the University of Toronto Department of Linguistics.

The banquet was also the occasion for the awarding of the President's Prizes. Continuing a tradition started by the late Kenneth Pike to provide encouragement to younger scholars, a committee consisting of the current President and former Presidents of LACUS selected the winner of the annual President's Prize for the best paper by a junior scholar. This year's Presidents' Prize (\$500) was awarded to Masahiko Komatsu, from Health Sciences University of Hokkaido, Japan, for his paper, 'Cross-linguistic variability of prosodic characteristics: A hard-science approach'. The President's Predoctoral Prize (\$100) was awarded to Lisa Rochman, from Ben Gurion University of the Negev, at Be'er Sheva, Israel, for her paper, 'Phonological effects in floating quantifier placement'. In addition, the Presidents' Committee awarded a special commendation to Arle Lommel at Indiana University, Bloomington, for his paper, 'Dialects, subcultures, and viral quasisppecies: Applying a biological model of variability to language and culture'.

The Presidential Address presented at the annual banquet was given by Lois Stanford, of the University of Alberta, entitled 'Assisted inverse translation: Saint Jerome's Children'.

Eighty-four papers were accepted for presentation, coming from 18 countries. In addition to papers from members in the US and Canada, the papers accepted came from Australia, Belarus, China, Israel, Holland, Hong Kong, Japan, Nigeria, Norway, Poland, Scotland,

Slovenia, South Korea, Spain, Switzerland, and Wales. As is the tradition of LACUS, the papers accepted represented a diversity of theoretical viewpoints.

The papers in this volume went through a two-stage review process. Before the conference, abstracts were vetted by the Board of LACUS. Those accepted papers which were presented and submitted for publication then went through a second review process by our Editorial Board. Most papers went through at least one revision before being accepted and appearing here. Special thanks go to Sydney Lamb, Executive Director of LACUS, for his important contributions in all aspects of the LACUS meetings and proceedings, and to Shin Ja Hwang, Doug Coleman, and Adam Makkai.

Our thanks go to all those who helped with the running of the conference, especially Ariel Condino, Bruce Park, and Harold Barnett, the Office of the Dean of Arts and Science of the University of Toronto, the administration and technical support at the Faculty of Dentistry, where the talks took place, Dean John Walker and his staff at George Brown School of Hospitality and Tourism, and the staff at Rockway Glen. LACUS member Sheila Embleton, Vice President Academic, York University, arranged for support for the opening reception.

We extend our personal thanks to the three people we are specially commemorating in this volume, Saul Levin, Robert Longacre, and Victor Yngve, all of whom have added immensely to our understanding of language and linguistics, and to LACUS in general and all the great scholars who have attended and contributed down through the years, including M.A.K. Halliday, Charles Hockett, Kenneth Pike, and Ernst Pulgram. We also give our thanks to H.A. Gleason, Jr. and Sebastian Shaumyan, both of whom, unfortunately, passed away this last year.

August 2007

Peter A. Reich
William J. Sullivan
Arle R. Lommel
Toby D. Griffen

I



FEATURED
LECTURES



INAUGURAL LECTURE

WHY CAN'T YOU UNDERSTAND YOUR OWN LANGUAGE?

DENNIS R. PRESTON
Michigan State University

IS IT TRUE that you might not be able to understand your own language? In asking this question, I exclude consideration of

1. slips of the tongue, e.g. 'I slipped on a panana beel', or ear, e.g. the speaker says 'I heard you last night', but the hearer hears 'I hurt you last night';
2. disfluencies, e.g. mumbling;
3. cross-modal interferences, e.g. the McGurk effect (McGurk & MacDonald 1976), in which one takes the 'average' of a mismatch between the acoustic signal and a visual cue given by the speaker's lips and mouth;
4. ambient noise of any sort; and
5. expectations, especially of a sociolinguistic nature, e.g. Niedzielski 1999, Strand 1999, Plichta & Preston 2005).

What I do address is the comprehension of single-word tokens, taking into consideration a variety of phonetic and phonological characteristics, and then the comprehension of similar tokens in carrier phrases, in which characteristics of the carrier phrase as well as the target word are considered.

I deal with these questions in the context of the Northern Cities (Chain) Shift (NCS), a rotation of several vowels that has taken place (and is still taking place in more rural areas and areas farther to the west) in the United States Great Lakes region (e.g. Labov 1994:177–201). The shift, shown in **Figure 1** (overleaf), appears to have moved from east to west, jumping from one large urban area to another—Rochester to Buffalo to Cleveland to Detroit to Chicago and westward. Here /æ/ fronts and raises (and gains a centering offglide, not shown here); /a/ moves forward into the space vacated by /æ/ (and lowers, also not shown here); /ɔ/ lowers and fronts into the space vacated by /a/. These first three steps of the shift are followed by considerable lowering and some backing of /ε/ (path b) or a minimal lowering but more dramatic backing (path a); these two paths have, at least among suburban Detroit, Michigan adolescents, been shown to have social significance (Eckert 1991). The next two stages, numbered 5 and 6 in **Figure 1** but perhaps not as well established in research as regards their order in the shift, involve a backing of /ʌ/ into the territory previously occupied by /ɔ/ and a lowering and backing of /ɪ/ into the territory previously occupied by /ε/.

Research on this shift identifies it as an example of *change from below* (Labov 1966:224); that is, there is no awareness (and therefore no stigmatization) of it. Respondents from urban southeastern Michigan, for example, where the shift is well advanced, rank their

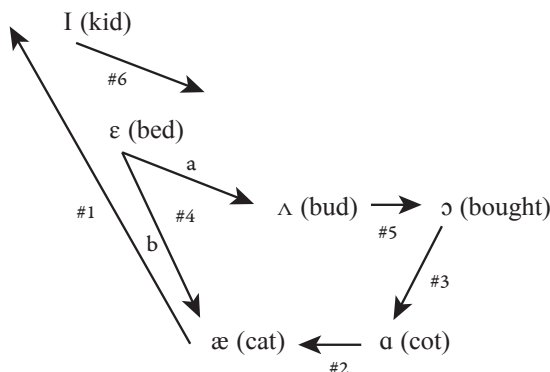


Figure 1. The Northern Cities (Chain) Shift.

English the most standard in the US (e.g. Preston 1996). Both studies reported on here refer to the ability of hearers to correctly interpret monosyllabic words whose vowel nuclei are those involved in this shift.

1. STUDY #1: THE COMPREHENSION OF SINGLE-WORD TOKENS. In previous work on single word tokens in which vowel identity is the variable, comprehension rates have been very good—e.g. Peterson and Barney (1952) and Hillenbrand *et al.* (1995), although Cutler *et al.* (2004) shows more misunderstandings.

Peterson and Barney's (1952:182) F1 and F2 formant outline (182) has been accepted for some time as the basis for the so-called General American vowel system (i.e. the vowel quadrangle). The tokens collected from male, female, and child respondents by Peterson and Barney were not only used to form this generalization but were also played for listeners, and the comprehension rates for only the six vowels involved in the NCS are shown in column 1 of **Table 1**. These percentages are very high, suggesting that single word tokens involving these vowels, at least for these respondents (many of whom were the same persons as the speakers), are very well understood.

Hillenbrand *et al.* recorded a number of respondents from the northern parts of the Midwest, and their F1 F2 means define a somewhat different vowel space, one clearly influenced by the NCS, particularly as regards the reversal of the positions of the /æ/ and /ε/ vowels. Their comprehension test results on these tokens, however, are not very different from those found by Peterson and Barney, in spite of the different positions of the vowels (column 2, **Table 1**).

Cutler *et al.* find a much worse comprehension rate among their listeners when they played tokens from only one female speaker from Iowa, the state most often cited in cultural geography as typical of the US Midwest (column 3, **Table 1**). Who is right?

There are several problems with each of these studies. Peterson and Barney used a very large sample, one perhaps even overnormalized by its size. More importantly, there was little control for region of the speakers or hearers, and they comment on the fact that some respondents are not well understood due to vowel conflations, particularly in the low-back area.

Vowel	% Correct		
	Peterson & Barney 1950	Hillenbrand <i>et al.</i> 1986	Cutler 2004
ɪ	92.9	98.8	81.8
ɛ	87.7	95.1	84.2
æ	96.5	94.1	78.3
ɑ	87.0	92.3	42.3
ɔ	92.8	82.0	47.3
ʌ	92.2	90.8	64.9

Table 1. Percent correct (for NCS vowel tokens only) in three single-word comprehension studies.

Although some speakers also conflated /ɪ/ and /ɛ/ before nasals, the researchers appeared not to understand the phonetically conditioned status of this merger (Preston 2006).

Hillenbrand *et al.* screened their speakers very carefully (particularly to avoid the low-back merger), but they used phonetically trained hearers, a fact that doubtless contributed to their very high rates of comprehension.

Cutler *et al.*, which shows considerably worse results for several of the vowels in question (column 3, **Table 1**), may reflect the serious mismatch between speaker (Iowa) and hearers (Florida university students), although the latter were also not controlled for region.

Preston (2005) seeks to overcome some of these problems but complicates the task by intentionally looking at a vowel system undergoing rapid and dramatic change—the NCS. The main focus of this research is to see the degree to which local speakers can accurately identify single word tokens containing vowels from the NCS in their shifted positions. Three additional questions, however, are also addressed in the present research:

First, do locals have an advantage in understanding local norms when the notion *local* also reflects such sociolinguistic characteristics as sex, age, status, urbanity, and ethnicity? Previous research (Evans *et al.* 2000) shows southeastern Michiganders to be more oriented to NCS production if they are young, European American, female, middle or upper-middle class, urban, and belong to a group that has lived in the area for many generations. Will comprehension mirror production along these same lines?

Second, when vowels are misunderstood, is it in the direction of the pre-shifted token (Labov & Ash 1997)? Isn't it most likely that a mistake will be made that reflects the new position of the sounds in the emerging system, particularly among those speakers who are most advanced in using it? For example, suppose a listener hears a shifted version of *pet*. As **Figure 1** shows, *pet* (along path b) has moved into the territory formerly occupied by *pat*. But *pot* has even earlier moved into the vacated *pat* territory. Will hearers be likely to hear *pet* as *pat* (the old system) or *pot* (the new system)?

Finally, what other characteristics of these sounds might influence comprehension?

- a. Phoneme class history: phonemes with a complex history, some of which is reflected in variation even in present-day dialects, might be less well understood.

- b. Magnitude of shift: items that have moved a greater distance might be less well understood than those that have not moved so far.
- c. Increased (decreased) proximity to other items in the system: vowels that move into the space of another vowel are more likely to be misunderstood, although this calculation will necessarily refer to the answer to question 2 above.
- d. Changed phonetic characteristics: vowels that have some phonetic distinctiveness (other than F1–F2 position) from those with which they might be confused are perhaps more likely to be understood.
- e. Vowels in the NCS that shifted earliest (e.g. /æ/ and /ɑ/) are likely to be better understood than those that have moved more recently (e.g. /ɪ/ and /ʌ/).

1.1. METHODOLOGY. 20 words spoken by young, middle class European-American women from urban southeastern Michigan were played twice but responded to only once: *bag, cut, big, can, bond, bed (=bud), hawk, done, sock, tin, hot, caught, pat, Ben (=bun), dawn, bed (=bad)*. An acoustic analysis of these tokens showed that seven were considerably shifted in the direction of the NCS (*Ben [=bun], bed =bad], pat, caught, cut, tin, and sock*), and they are the ones reported on here. Four vowels not involved in the NCS were included (*boot, beet, bait, and boat*) but showed little misunderstanding (.96, .98, .98, and .99, respectively).

The respondents wrote down the word they heard, and answers were judged correct even if only the intended vowel was indicated (e.g. *tech* was judged a correct response for the stimulus *bed*). The respondents, aged 15–30, were divided into five groups:

1. EAU=European American urban southeastern Michigan (N=71)
2. EASR=European American nonurban southeastern Michigan (N=41)
3. EAAU=European American Appalachian urban southeastern Michigan European (N=2)
4. EARM=European American nonurban mid-Michigan (N=17)
5. AA=African American Urban southeastern Michigan (N=25)

All groups were relatively evenly distributed by sex but were not completely controlled for status. (Groups 1 and 2 were all undergraduate students at Michigan State University.)

1.2. RESULTS. **Table 2** shows the results.

1.3. INTERPRETATION. Our first question asked if locals, particularly in either the socio-linguistic or the demographic subgroup sense, had an advantage in comprehension. The overall answer is clearly yes. The first part of **Table 2** (Groups) shows the influence of urban versus rural; the urban European American group (EAU) scores highest; the other two long-term local European American groups (EASR and EARM) not only lag behind the urban group but are also ordered with reference to their proximity to urban areas; the southern EASRs are closer to the urban areas of the southern parts of the state or live in larger towns in that area and have a better comprehension score than the EARMs, who live farther north in the state and a greater distance from an urban area.

	EAU	EASR	EAAU	EAM	AA
Correct	326	133	9	73	97
Incorrect	165	70	5	46	72
% Correct	66.40	65.52	64.29	61.34	57.40

	/ɛ/(=æ/)	/ɑ/	/æ/	/ʌ/	/ɪ/	/ɔ/	/e/(=ʌ/)
Correct	128	128	105	104	83	65	25
Incorrect	14	15	37	39	59	77	117
% Correct	90.14	89.51	73.94	72.73	58.45	45.77	17.61

$\chi^2=0.0000$

	Female	Male
Correct	396	242
Incorrect	298	150
% Correct	65.56	61.73

Table 2. Results for the single-word comprehension test (younger speakers only).

The Group scores of **Table 2** also show that European American, or majority group respondents, have better comprehension scores than African Americans, in spite of the latter’s urban residence, a perceptual correlate to the suggestion (e.g. Labov 1991:38 for African Americans) that minorities in many areas do not participate or at least do not fully participate in ongoing majority sound changes, confirmed in detail for the Lansing, Michigan African American community by Jones (2003).

Finally, these Group scores also suggest that groups that have lived in the local area longer comprehend better. The distance between the urban European American group (EAU) and the immigrants from Appalachia (EAAU), although the latter also live in urban, southeastern Michigan, shows the former to be superior in comprehension. Although African Americans have in general lived in the area for a shorter period than any of the European American groups except the EAAUs, ethnicity may be the principal factor here, and we cannot safely say that length of time in the area is a major contributing factor to the AA group.

Table 2 also shows that sex follows a predicted pattern; women comprehend these tokens better than men, although by a small margin. The individual vowels (Vowel in **Table 2**) are discussed in detail below.

Since all EAUs and EASRs were classified as middle class due to university enrollment, data for status cannot be given for all the groups studied here. **Table 3** (overleaf) shows, however, that when status scores, which are available for EAAUs, EARMS, and AAs, are calculated, the expected superiority of the middle class emerges.

Finally, since these respondents were all young, **Table 3** also adds scores broken down for age for the three groups among whom age differences were studied, and the expected pattern of better comprehension by younger speakers emerges.

	Age			Status	
	14-30	31-55	55-80	Middle	Working
Correct	179	129	35	200	143
Incorrect	123	106	36	143	123
% Correct	59.27	54.89	49.38	58.48	53.76

Table 3. Age and status figures for WAAU, EARM, and AA speakers only.

	Total	/ε/	/a/	/æ/	/Λ/	/I/	/ɔ/	/ε/	other
/ε/ = /æ/	142	128	0	8	0	0	0	x	6
/a/	143	1	129	13	0	0	0	x	3
/æ/	142	34	0	108	0	0	0	x	0
/Λ/	143	0	11	1	104	0	24	x	3
/I/	142	58	1	0	0	83	1	x	0
/ɔ/	142	0	71	3	0	0	66	x	2
/ε/ = /Λ/	142	x	2	1	109	1		25	4

Table 4. Correct and incorrect vowel identifications.

In summary, the factors that promote better comprehension are the same as those that have been found to correlate with the more advanced positions in production for this region (Evans *et al.* 2000):

- 1. Ethnicity — European American
- 2. Area — urban
- 3. Sex — female
- 4. Status — middle
- 5. Immigrant status — non-immigrant

Question two asks if the misunderstandings of these vowels go in the direction of their pre-shift or post-shift locations. In the example given above, when /ε/ (*pet*) backs and lowers (path b of **Figure 1**), will it be misunderstood as /æ/ (*pat*) in the pre-shift interpretation or as /a/ (*pot*) in the post shift interpretation? In **Table 4** shading shows the correct answers and bold type shows the most frequent mistakes—all pre-shift items. Italic type shows misunderstandings based on the post-shift effect—in fact, only one. Although all the respondents reported on here are young, and some are from areas where we know they are advanced in the shift themselves, the vast majority of misunderstandings refer to the older, pre-shift system.

Finally, what historical, phonological, perceptual and other characteristics of these vowels influence these comprehension rates? In **Table 5**, the order of comprehension shown for

Study Result	NCS Order	Phonetic Clue	Distance	Distinct	History	Total
1 ε b	4	4.5	6	4	2.5	21
2 a	2	4.5	5	1.5	4	17
3 æ	1	1	1.5	5	5	12.5
4 ʌ	5	4.5	1.5	3	6	20
5 I	6	4.5	4	6.5	1	22
6 ɔ	3	4.5	7	1.5	7	23
7 ε a	7	4.5	3	6.5	2.5	23.5

Table 5. Possible influences on comprehension of NCS tokens.

the individual vowels in **Table 3** is repeated as Study Result. The scale for the other factors indicates the degree of difficulty in comprehension that factor might contribute. A score of 1 indicates maximum comprehensibility, and 7 indicates maximum difficulty. The factors are the following:

1. Recency: older changes in the NCS should be better understood.
2. Phonetic clue: since vowels which give some distinctive clue to their identity should be better understood, I assigned /æ/ a 1 on the basis of its inglide (i.e., [æ^ɪ]); the remaining six items show no such distinctiveness and all are assigned a 4.5, the mid-point of the remaining ranks (i.e., 2 to 7).
3. Distance: items that have moved farthest in the vowel space may stand a greater chance of being misunderstood, and the calculations from the contrast between the values presented in **Figure 2** (overleaf) result in the numbers assigned under Distance in **Table 5**. **Figure 2** is a Bark scale, one that suggests perceptual rather than production differences in the vowel space.
4. Distinctness: vowels at a greater distance from others with which they might be confused should be better understood, although, as shown above, this is limited to pre-shift positions and is again calculated on the basis of the relative positions shown in **Figure 2**.
5. History: vowels which have a less complex history should be relatively easier to process, particularly when that complexity is revealed even in modern dialect phoneme assignments; I do not have space to provide the historical details here, but they are fairly well-known.

As **Table 5** shows, a full comparison of the features that might have promoted or demoted comprehension does not result in exactly the same ordering as the order of comprehension (Study Result). The most dramatically out of order element is /ε/ b; it was the best understood in the experiment, but it is mid-late in the shift (4th) and has a fairly large overall

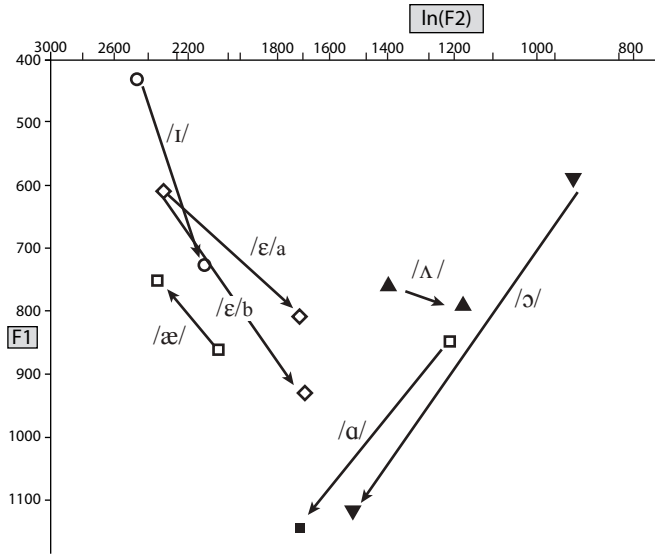


Figure 2. A comparison of the Peterson and Barney (1952) means for female speakers (base of arrow) and the token played in the current study (tip of arrow) on a Bark scale.

score (21). /ɑ/ and /æ/ reverse positions in comprehension order and total score, but the difference is not large and they are adjacent in both scales. No one single factor seems fully explanatory for the comprehension rates observed here, but a combination of perception and historical factors seems to provide some insight. It is perhaps not surprising that multiple factors are at play here.

What role do carrier phrases play in such comprehension tasks?

2. STUDY #2: THE COMPREHENSION OF WORDS IN CARRIER PHRASES. Do carrier phrases give hearers an advantage in understanding words with tokens of change-in-progress sounds (Labov & Ash 1997, Plichta 2004)? What is the role of specific items in carrier phrases? This experiment focuses on the role of NCS vowels in a carrier phrase promoting (or demoting) understanding of the target NCS vowel.

There are some difficulties with many previous carrier phrase comprehension studies of varieties. First, in Labov and Ash (1997), the carrier phrases contain other tokens of the NCS and Southern Vowel Shift (SVS).

- a. In their NCS test: *had* and *sandals* occur along with the test item *socks*.
- b. In their SVS test: *I* and *knew* occur along with the test item *guy*.

These other exemplary tokens are in some cases the same as and in other cases different from the test item:

- a. In their NCS test: The *socks* vowel does not occur.
- b. In their SVS test: *I* occurs, the same vowel as in *guy*.

Whether or not the possible misunderstanding creates a real word is also a confounding factor in these studies. In the above, for example, the misunderstanding produces a word in the NCS test (*socks*) but not in the SVS test (*gab*).

Finally, the carrier phrase in the NCS test (*You had to wear socks not sandals*) gives a clue to the identity of the word; the SVS test (*And I knew the guy*) does not.

Second, in a more recent study, (Plichta 2004), seven resynthesized tokens of *sock* (at 33 Hz intervals along F2) were embedded in carrier phrases that contain several words with NCS vowels; all the carrier phrases contain other examples of the *sock* vowel, the test item. Plichta avoids some of the problems of Labov and Ash, since the misunderstood word is always a real word (*sock* or *sack*), and the carrier phrase gives no contextual clue to the identity of the item. Native NCS speakers' ability to hear the test item as *sock* as its F2 frequency increased was enhanced when the test item was in a carrier phrase, but it is still not clear if the retention of the *sock* understanding was enhanced by the presence of NCS vowels in general or the presence of the vowel that matched the test item in particular.

2.1. METHODOLOGY. The experiment reported here attempts to address just this question and was based on the same 7-step manipulation of the NCS vowel *hot* (Plichta, Preston & Rakerd, in press). We selected three young (20 year old) male speakers from Minnesota who showed no evidence of the NCS. They were matched for weight, height, and vocal quality and read the following sentences:

Katie heard *Bob* say the word *hot*
 Katie heard *dad* say the word *hot*
 Katie heard her *boss* say the word *hot*

In each phrase the word *hot* occurs, but there is only one other NCS word in the carrier phrase (*dad*, *Bob*, or *boss*). We resynthesized these readings as follows:

Speaker #1 is always NCS shifted.
 Katie heard *Bob* say the word *hot*
 Katie heard *dad* say the word *hot*

Speaker #2 is mixed: *boss* was shifted; *dad* not.
 Katie heard her *boss* say the word *hot*
 Katie heard *dad* say the word *hot*

Speaker 3 was never NCS shifted.
 Katie heard *Bob* say the word *hot*
 Katie heard her *boss* say the word *hot*

Each stimulus was played with the word *hot* added at the end in each of its seven modified steps along F2 to test the respondents' tolerance of the *hot* interpretation. Since each of the three speakers used two carrier phrases the total was $6 \times 7 = 42$. The experiment was mounted on a website with instructions in which the respondents were asked to identify the last word in the stimulus as *hot* or *hat*. The demographic variables for the 44 persons who responded were:

1. Sex
2. Age: by decades, teens through 70's
3. Region: NCS or non-NCS

The experimental variables were:

1. Speaker-token:

Speaker #1:	a) Bob-shifted	b) dad-shifted
Speaker #2:	c) boss-shifted	d) dad-unshifted
Speaker #3:	e) Bob unshifted	f) boss unshifted
2. Level: the 7-step fronting used in Plichta.

The data were analyzed with the GoldVarb II program, with identification of the word as *hot* as the applications value. The GoldVarb weights are shown only for those factor groups that proved significant, and the Apps column indicates the number of times the stimulus was judged to be the *hot* vowel, i.e., the number of times the rule applied. S and U indicate NCS shifted and unshifted tokens, respectively.

2.2. RESULTS. The results are shown in **Table 6**. Weights are shown only for significant factor groups; the Apps column indicates the number of times the stimulus was judged to be the *hot* vowel, i.e., the number of times the rule applied. S and U indicate NCS shifted and unshifted tokens, respectively.

2.3. INTERPRETATION. Level: for the seven steps along F2, the range of regression weights is from .868 to .161, clearly indicating that the fronted vowel of *hot* can be misunderstood as *hat* as it fronts. In the logistic regression technique used by GoldVarb, scores above .5 are interpreted as those that promote the rule (in this case, factors that promote a respondent's hearing the item as *hot* at more advanced positions along the F2 scale) and those under .5 as those that demote application. The *hot-hat* choice seems to reach a chance level in the middle of the F2 scale (step .475).

Sex: Women have an advantage in hearing fronted forms. This sensitivity seems to correspond with female leadership in sound change, here even when the respondents are not all participants themselves in the change.

Age: With regard to age, respondents in their 30s (and 40s, marginally 50s and 20s) have an advantage in hearing advanced forms. Perhaps the youngest respondents are not yet sensitive to areal variation, and the older respondents are not sensitive to more recent

		Weight	%	Apps	Total
SEX	Male	0.386	78	329	420
	Female	0.560	86	689	812
AGE	Teens	0.331	77	86	112
	20's	0.485	83	488	588
	30's	0.651	88	172	196
	40's	0.507	84	94	112
	50's	0.487	79	178	224
	60's	1 resp	55	15	28
	70's	KO	100	42	42
F2	1	0.868	98	172	176
	2	0.716	94	166	176
	3	0.619	91	161	176
	4	0.475	86	151	176
	5	0.334	77	136	176
	6	0.299	74	131	176
	7	0.161	57	101	176
AREA	NCS	ns	82	457	560
	no NCS	ns	83.5	561	672
TOK	S-BOB/BOSS	0.543	85	522	616
	U-BOB/BOSS	0.457	81	496	616
	S-DAD	ns	80.5	276	343
	U-DAD	ns	82	282	343

Table 6. GoldVarb results for the carrier phrase study.

developments. Unfortunately, only one respondent in his 60's participated, and, although his percentage score indicates less tolerance for advanced forms, we could not include him in the statistical analysis. The one respondent in his 70's heard *hot* at all seven steps, most likely on the basis of hearing difficulty, and was also excluded.

Area: Most dramatically in contrast to studies cited above, respondents from NCS areas do not have an advantage in hearing advanced forms. Perhaps determination of region was too gross and allowed rural respondents or others not particularly involved in the shift to be identified as NCS participants. We will require a more intense participation from local respondents of different backgrounds, as in the first study reported on here, before we can draw firm conclusions about this factor.

Token: The first run of these data as regards the identity of other NCS tokens in the carrier phrase was inconclusive, but a slight reorganization resulted in the findings shown in **Table 6**. The shifted items *Bob* and *boss* were combined on the basis of their identity with the test vowel in the first case and their proximity to it (and frequent confusion with it, as shown above) in the second. The perceptually and phonetically more distant vowel of *dad*

was separated and was not significant for degree of shift. The shifted *Bob* and *boss* group promoted the continued hearing of shifted tokens of *hot* as *hot* while unshifted *Bob* and *boss* caused items to be interpreted as *bat* when the tokens were even less shifted. In other words, ordinary people may be responsive to the local phonetic character of other items in their consideration of a speaker's system, but they may not be able to construct an overall representation of the system based on items that are distant from the item under consideration. This would seem to confirm the importance of specific items in carrier phrases, but it also suggests that the influence is local, not system-wide. When the same vowel as the test item (i.e. *Bob*) or a phonetically close vowel (*boss*) was heard, the perception of *hot* was influenced, but shifted and unshifted *dad* had no influence. Perhaps a shifted *dad* will not trigger reanalysis of *hot* since a phonetic space is created (a pull-chain effect) into which the *hot* vowel might move, but the hearer perceives no overlap danger. In the case of shifted *boss*, however, a push-chain influence may be sensed, causing a reanalysis of the space for *hot* (i.e., fronted) to make sure the two items are kept distinct. To coin a phrase, all hearer normalization might be local, requiring a refinement of the long-standing conclusion of Ladefoged and Broadbent (1957) that the relative positions of formant frequencies in a carrier phrase influence the perception of a test item.

3. CONCLUSIONS. Both these studies suggest that the ability to comprehend items in changing systems may be as closely related to demographic features such as age and sex as they are to region, perhaps more so. Women appear to have a considerable advantage in hearing such forms, as do young adults and middle-aged persons. Finally, a carrier phrase gives a listener an advantage in hearing such forms only if it contains a shifted example of the test item itself or an adjacent item.

Outside the specific environment of cross-dialectal comprehension, other suggestions emerge from these findings. For speech science, although there is recognition that vowel perception is less categorical (Lane 1965), the prevailing view does not seem to recognize the considerable gradience uncovered in these more recent perception experiments (Strange 1999). For sociolinguistic theory, in a recent thorough review of the history and current status of the notion *speech community*, Patrick (2002) does not mention the possibility that norms of perception might play as big a role as those of production and evaluation in giving empirical support for the construct. For phonological theory, the findings here suggest that system prototypes might be organized around idealized forms, ones which disallow the overwhelming influence of numerous exemplars, perhaps particularly in the perceptual system. For language change, perhaps outliers and seeds of change are rather conservatively approached by listeners, who appear to anchor their abilities in a previous system and who must, therefore, have some access to such speakers, either through older members of the speech community or perhaps even media or other contacts outside it, although sociolinguists have always been reluctant to acknowledge the influence of forms not embedded in face-to-face interaction.

In conclusion, this work shows once again that perception/comprehension does not appear to be a mirror of production. The tacit assumption that it is and the failure to take the fact that it is not into consideration may derail several approaches to the enterprise of studying cross-dialectal comprehension in any sense of the term.

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PRESIDENTIAL ADDRESS

PRESIDENTIAL ADDRESS: SAINT JEROME'S CHILDREN: AN ADVENTURE IN ASSISTED INVERSE TRANSLATION

LOIS M. STANFORD
University of Alberta

SAINT JEROME IS THE PATRON SAINT OF TRANSLATORS.* Anyone who undertakes to render a text from one language into another is under his protection. This evening I would like to tell you about a translation project that two of his children, my colleague Professor Jenn-Shann Lin of the Department of East Asian Studies at the University of Alberta and I, have recently been involved in, and to comment on some of the things I learned about translation in the course of this work. In particular, I will discuss what I believe is required for two people to cooperate in such an activity, what each brings to it, and some of the interesting translation issues Dr. Lin and I encountered while doing the work.

The project was the translation of a set of Taiwanese short stories into English. Dr. Lin, a native speaker of Chinese and a second language speaker of English, was the primary translator. He asked me to bring a native English speaker's ear to the fine-tuning of the final English version. Saint Jerome looked kindly on us. The project is now complete, and the stories published in a book called *Magnolia: Stories of Taiwanese Women*, by Tzeng Ching-wen (2005).

1. THE TEXT. Tzeng Ching-wen is a contemporary Taiwanese author, and he is a master storyteller. Another University of Alberta colleague, Dr. Anne Malena of the Department of Modern Languages and Cultural Studies, recently wrote: 'The act of literary translation often begins as a love story. The translator falls in love with a text and acts upon [the] desire to transform it into another language' (2006). Dr. Lin loved and admired Tzeng Ching-wen's stories, and through working with him, I came to love and admire them too.

Magnolia contains thirteen of Tzeng's stories, written between 1971 and 1997. Dr. Lin selected them particularly, from the more than one hundred that Tzeng has written, because they deal with the lives and fortunes of women in Taiwan's complex and rapidly changing society—women of four generations living in 'Old Town' (actually Hsin-chuang, the small town near Taipei where Tzeng grew up), in urban Taipei, and in the surrounding countryside. The stories are full of unforgettable characters—not only the central women with their compelling or tragic or funny or tender stories, but also an array of minor characters who remain with us long after we have closed the book: the fast-talking land developer who wants to cut down Mother's magnolia trees; the kindly art dealer whose notions of the proper aesthetic of Chinese painting are challenged by the tragic woman artist; Uncle

* This paper is dedicated with gratitude to Dr. Jenn-Shann Lin, who introduced me both to Tzeng Ching-wen and the stories of *Magnolia*, and to the art and science of translation.

Fu-shou, who cannot grieve openly with his wife for their long-missing son because 'he was the one who consoled people'. It is, in fact, primarily through these vivid character sketches that the narrative plots of the stories emerge.

Two things made Tzeng Ching-wen challenging to translate. First, he, himself, is a translator and has translated a book of Chekhov's short stories into Chinese. He is the critic we most hoped to please with our translation. Second is the fact that his own style in Chinese embodies a most distinctive voice. In our introduction to *Magnolia*, Dr. Lin wrote that Tzeng utilizes

only the most precise and unadorned language in narration, in a style reminiscent of a thrifty pioneer's cultivation of mountainous wasteland. Even if the setting of a story takes him to the metropolis of Taipei, he steadfastly refuses to resort to ornate and embellished language. The closely crafted wording and phrasing reveals his chosen voice in literary discourse. (Lin & Stanford 2005:xii)

We felt a great responsibility to find that voice in the English translation.

2. THE PROCESS OF ASSISTED INVERSE TRANSLATION. Our two-person process is called *assisted inverse translation*. An inverse translation is a translation in which the original source text is in the translator's first language, and the target text, the translation, is in his non-native language. The more usual practice in translation is the opposite direction (source text in the translator's second language and target text in the native language). Indeed, inverse translation has often been frowned upon, particularly in the translation of works of literature (Pokorn 2005). It does, however, have an illustrious precedent: Saint Jerome himself, a native of Dalmatia, was an inverse translator of the New Testament from Greek into the Latin of the Vulgate Bible.

An inverse translator, who has a native-speaker's intimate and nuanced knowledge of the language and culture of the source text but perhaps not complete confidence in his control of those skills in the target language, may choose to ask an associate who is a native speaker of the target text language to assist in decisions about the final version. And while an assisted translation may sound suspiciously like translation by committee, there is also historical precedent for this collegial approach to realizing the best possible rendering of a target text: the Authorized version of the Christian Bible ('The King James Bible') was produced by a 'committee' numbering 47 individuals (Nicolson 2004).

I do not cite these two illustrious translations lightly. Saint Jerome strove for fidelity to his source text (Malmkjær 2005), and the King James translators gave much thought to the power and beauty of their creation (Nicolson 2004). Dr. Lin and I also took these as our goals.

3. LESSONS FROM THE PROCESS. What is so interesting about the process of assisted inverse translation? It is the fact that the involvement of two individuals with very different skills working together actually allows some of the process of translation to be seen in slow motion. In the course of bringing *Magnolia* to life in English, Dr. Lin and I consciously confronted, through hours of discussion and e-mail, the same sort of issues that I imagine

a single translator ponders alone. The difference in dealing with these issues collegially was that they required overt articulation, followed by consideration, argumentation, and decision (and frequently several iterations of these latter processes).

Working in this fashion provided some lessons both about the translation process, and about what a translator and an assistant must each bring to the task in order to attempt a faithful and beautiful translation of one piece of literature into another. Concerning the latter, the first and obvious necessity is a great deal of trust and faith in the other person's linguistic skills and literary sensitivity in his or her first language. Thus, when Dr. Lin explained that the Chinese term for *inauspicious* connotes far more than just 'unlucky', and is part of a cultural belief system, and I explained that in English *inauspicious* can be used quasi-jokingly (You spill your morning coffee and say, 'Well! That was an inauspicious start to the day!'), we were each willing to trust the other's knowledge and look further for a better word. We were lucky that we shared a language for talking about language; as linguists we found the tools and taxonomies of descriptive linguistics to be extremely useful constructs in the negotiations of collegial translation work. Translation is surely a specialized field of applied linguistics.

However, I will argue that there are two other more substantive areas in which the translator and the assistant must share a common understanding in order to function as a single mind and achieve an effective translation. These are the following. First, the two must be in agreement about the nature of the translation they are engaged in, and have resolved the question of its fidelity to the original—are they striving for translation or adaptation, will they translate very closely or quite broadly? Our choice was to be as faithful as possible to the original, with the aim of maintaining Tzeng Ching-wen's distinctive voice. Second, the two must learn to see their two cultures simultaneously through each other's eyes—their goal being eventually to allow their readers to do the same. The importance of these initial agreements will, I hope, become evident in the following discussion of some of the challenges we confronted in translating the *Magnolia* stories.

4. THE CHALLENGES OF *MAGNOLIA*. The challenges of any translation are intricate and complex; indeed, they are as intricate and complex as language itself. Decisions about fidelity to the source text necessarily involve consequences for the accessibility of the target text for the intended reader. Compromises must be made, and the translator and assistant must share a common goal and a common aesthetic. Qian Zhongshu, a 20th-century scholar of Chinese translation, says that translations should entice the reader to yearn for the original (Chan 2004). Our goal was to have our English readers yearn to know Old Town and environs, to experience the lives of the people who lived there, and to be able to understand the stories easily in their own realm of experience. But we hoped the translation would be more than an invisible bridge from one text to another. We wanted to create a worthwhile piece of literature in the target language.

I now present three aspects of the translation of *Magnolia* that Dr. Lin and I found particularly challenging. I think they are probably challenging issues in any translation, but the data are interesting and they also illustrate how the translator and the assistant can work together, and what each brings to the process. The first and probably the most obvious

challenge is in the area of lexis. An appropriate subtitle for this discussion might be 'The Thesaurus is Not Our Friend.' The second area deals with cultural incongruities; its subtitle might be 'Do We Have to Use a Footnote?' The third area, I will simply call voice; its subtitle should surely be 'The Hardest of All,' for if a translation is a work of two voices, what is the responsibility of the second voice (the translator—in our case, two) to the first voice (the author), and how is that responsibility to be met?

Dr. Lin's and my method of working was as follows. He sent me an initial draft of his translation. I returned to him an intermediate draft with some changes and lots of suggestions and questions. We met to discuss the annotated intermediate draft, sometimes several times, with additional e-mail and phone consultations. From the intermediate draft, now freighted with yet more notes, comments, changes, explanations, picture sketches, crossings-out and jottings, we prepared the final version to submit to the publisher. I have gathered the data that I will discuss below from comparison of the initial translation, the heavily annotated intermediate draft, and the final version of each story.

4.1. LEXIS; OR, THE THESAURUS IS NOT OUR FRIEND. A word that strikes a wrong note is the first signal to a target-language reader that the translator is not going to be trustworthy—that the bridge from author to reader is not going to be reliable. Appropriate word selection is complicated by register, dialects of many etiologies, diachrony, and markedness. The choice of the right word can be extraordinarily complex, especially in English with its very large lexicon, although in some cases it is just a matter of pursuing some arcane knowledge across a cultural gap, e.g., discovering what one might usefully call those artifacts in a story that do not exist in English-speaking areas of the world and have no English names in Taiwan. A case in point: we felt that the literal translation of a certain Chinese bird name into *crackle passer* (in the story 'Redeeming a Painting') could effectively distract an English reader's attention from the text in favour of wondering what sort of creature this was. Luckily we discovered that crackle passers were at least related to *shrikes*, which—if not absolutely correct ornithologically—is certainly a less intrusive name than *crackle passer*.

On a less frivolous level, the domain of lexis is interesting both for looking at what words don't work in a translation, and more particularly, why they don't. We found a number of examples of words for which the first translation, while not incorrect in referent, was in some way inappropriate to a native speaker's ear. For many of these words we could find no better explanation than that they seemed too "marked" and consequently distracted the reader from the flow of the narrative. Puddles on a road that a character remembers walking as a child needed to be *muddy*, not *miry*; the stones hidden under the mud were *sharp* not *prickly* on the soles of her feet ('My Cousin's Wife'). A frightened young woman runs to fetch the doctor and *whispers* (not *mumbles*) to herself, 'Don't die, Papa, don't die' ('Sounds at Night'). An elderly couple in the park after the rain are warmed by *the genial sun*, but this striking image interrupts the more important narrative flow: we tried *cheerful*, *welcome*, *comfortable*, and finally settled on *pleasant*. I think now that we might have used *kindly* ('Going to New Park to Feed the Fish').

Other lexical items were not quite suitable for a variety of dialectal or sociolectal reasons. (Lexical decisions in a translation give considerable insight into the enormous complexities

of second language acquisition.) A coal mine explosion that kills a miner blows off his clothes, but saying that he *died in the nude* has sexual overtones that *died naked* doesn't ('Sounds at Night'). In the same story, the miner's widow is forced into prostitution by her mother-in-law to keep the family from starvation, but calling the men who come to the house at night her *Johns* introduces crude street slang that does not belong in the mouth of the young sister-in-law from whose point of view the story is told, and we settled for *customers*. In 'My Cousin's Wife' the narrator refers to Cousin's Wife in her later years as *hoary*, but we changed this to *grey*. Seemingly only men and animals can be hoary. (Maybe you have to have whiskers.) Here are a few other examples. *Stinky* is a child's word; poisoned fish in a drained pond needed to be *stinking* ('To Set Lives Free'). The man in the art gallery in 'Redeeming a Painting' had to be described as wearing a brown *shirt*, not a brown *top*; a *top* is only appropriate for a woman's garment. In 'Ah-ch'un's Wife' the young widow of a man drowned in a heroic rescue attempt begs to be allowed to attend his funeral (forbidden in the culture of the day). She is frantic to see him one more time, and pleads, 'I only want to see him off!' But *see him off* evoked simultaneously for me a train station and a London gentlemen's club with the chaps raising a glass after old Reggie's funeral. We settled for *see him into the grave*. Truly, the thesaurus is not the translator's friend.

An amusing sidelight on lexis occurred with onomatopoeic words. Presumably onomatopoeic words mimic the sound of their referent. This proved less than accurate in several cases in the *Magnolia* stories. The onomatopoeic rendering in Chinese of the sound of cats running across a roof did not transliterate well into English (it sounded something like *clump*), and my suggestion that cats (in English) did not *make* a sound when running across a roof certainly did not meet the requirements of 'Sounds at Night'—a story in which the protagonist's anxious interior monologue about a variety of alarming sounds she hears in the night gradually reveals the sad and relentless direction of the narrative. We settled, less than contented, on the weakly-evocative English *thump* and *thud* for the nocturnal cats. In another story, 'Acacia Flowers', a man watches a woman's rhythmic motions while drawing water from a well in a wooden bucket. It is a tender and evocative scene and pivotal to the plot, but an original attempt at rendering in English of the onomatopoeic Chinese term for the accompanying sound of the bucket bumping against the well side, *rub-a-dub*, immediately primed the English reader to think of the capping line, 'Three men in a tub'. Aural representations actually turn out to be highly language-specific and a snare for the unwary.

A final question we confronted in the area of lexis concerned when to translate a Chinese term and when to let context reveal its meaning. This is one aspect of the wider decision about the correct balance between domestication and foreignization in a translation: to what extent is a story served by conveying to the target language reader a sense of its 'otherness' (Malmkjær 2005:3)? For example, we did not translate words like *yuan* or *catty*, believing that their meaning (if not their precise quantity of coinage or volume) was derivable from the text and that in their original form they enhanced the flavour of the setting for the English reader. We did not, as a rule, translate proper names, but sometimes an exception was necessary; for example, in 'Sounds at Night' we needed to translate the name of the dreadful and dangerous mine to capture Tzeng's irony—its name was 'The Benevolent and Virtuous Coal Mine'. Likewise, in 'Redeeming a Painting' the artist was addressed

by her husband as *Ai Mei* 'misty plum blossom', but signs her paintings, done as a widow, *Chi Mei* 'suffering plum blossom'. Clearly, the association of, and the difference between, the two names required the translation—not just the transliteration—of the Chinese characters into English, since they show an important aspect of the woman's feelings in one of the most complex stories in the book. Sometimes there were cases in which there seemed to be no really good solution. For example, in 'Sounds at Night' the Chinese idiom *sent into the bridal chamber/sent into the same room* is used to denote marriage. The English translation sounded affected, although the intended meaning was quite clear, but the choice of *married* sacrificed a great deal of cultural richness. We compromised by marking the first occurrence of *sent into the bridal chamber* with double quotes, so as to use it but also recognize its language-specific idiomaticity.

4.2. CULTURAL INCONGRUITY; OR, DO WE HAVE TO USE A FOOTNOTE? One of the most challenging tasks in translation is bridging cultural differences. These manifest themselves in such matters as historical referents that are significant to a story's plot but may be little known, or not known at all, by readers of the target text; in linguistic taboos, and the resulting euphemisms that are at a minimum intrusive but are also often puzzling to readers of the translation; and in what we called 'semantic voids'—places in which a concept important in the culture of the source text really has no parallel in the culture of the target language. In such cases, translator and assistant must communicate explicitly about such cultural incompatibilities, and if they have decided in advance—as we did—that footnotes are unacceptably intrusive in a work of literary fiction, they must find some way to bring the import and significance of the original construct into the target text. In these cases, fidelity to the original text is frequently difficult to maintain. Here are examples of this problem from the *Magnolia* stories, and how—with much thought and discussion—we decided to resolve them.

The deeply significant historical events of the political insurrection and the police seizures of citizens in Taipei that underlie the action of 'Let's Go to New Park to Feed the Fish' are relatively unknown to most of the people who will read this story in translation. Yet they are as central to Taiwanese readers as they are to the lives of the two main characters whose son disappeared in that unrest more than thirty years before the time of the story, and no real explanation of them is offered in the source text. Should we resort to an explanatory footnote? We thought not, not wanting to detract from the absorbing experience of reading this story. We chose, instead to rely on our readers having, somewhere in their mental worldviews, a general concept of a political rebellion brutally put down, and on their willingness to extrapolate from what they knew of the aftermath of such an event to the specific case of the parents of the vanished teenager.

In the same vein, the euphemism used in a language for referring to a cultural taboo may be mystifying when translated. In 'Redeeming a Painting' an attempted rape is described literally in English as *an attempt to push her down on the floor*. When I asked Dr. Lin if *attempted to rape her* could not be used, he explained that this would be inappropriately direct for Taiwanese culture, even in translation. We settled on *attempted to take her by force*, which—even though slightly archaic in English—was acceptable, although still almost too

direct. Sometimes there is not a comfortable middle ground. A similar example occurred in the translation of 'My Cousin's Wife', where the unmotivated epithet shouted at Cousin's Wife by her father was represented in both text and translation by *mother...* Because the shouting incident occurs early in the story, when the characters have not been shown in any previous interaction, it was not clear to the English reader what might be the intended meaning of this elided phrase: what was the father calling his daughter? Dr. Lin explained that anyone in Taiwan who read the story would know what word the father was shouting, and that the term of abuse would never, *ever* occur in print. We settled on *stupid bitch*—itself euphemism in this case, but sufficiently rude and abusive to indicate the relationship of the two characters.

Semantic voids presented perhaps the most difficult problem in cultural translation, requiring a certain nimbleness of mind to avoid that explanatory footnote. There were many examples in *Magnolia* (one of the reasons it is such an interesting book for English readers), but there are two that were particularly challenging. The first I have already mentioned: the case of *inauspicious*. It occurs in 'Sounds at Night', when the protagonist is remembering how as a child she was frightened at night by mysterious sounds on the roof. (It was the cats again.) She had feared that the sounds were *inauspicious*. But the connotations of *inauspicious* in English are very different from its equivalent in Chinese. It is a far more limited lexical item in English. There is, in fact, a cultural void in English for the Chinese concept of 'inauspicious', and there is no single term that will translate it. Perhaps the stilted phrase 'something that is a harbinger of bad fortune' comes closest. Rather than adding a long explanatory phrase not actually in the original text, we settled for the rather inadequate *something sinister* as being at least sufficiently alarming, if greatly underspecified. A second interesting case of a difficult cultural translation occurred in 'Let's Go to New Park to Feed the Fish' with the culturally specific epithet *short-lived guys*. This is the term that Aunt Fu-shou directs at the nice young policeman who tries to help her and Uncle Fu-shou across the street. It is what she called the military police who took away her son, and what she has called all subsequent policemen she has seen for more than thirty years. It is a common Chinese malediction implying 'may they not live long.' It does not translate meaningfully into English. After an interesting rummage through English curses, we regretfully chose to use *young punks* as conveying a proper combination of Aunt Fu-shou's disdain without being so strong as to bring reprisals down upon her from the recipient.

4.3. THE RESPONSIBILITY OF THE SECOND VOICE.

Whereas a first writer is relatively free to write what they desire, a translator may be thought to be doubly bound: bound to produce a text that is based more or less closely on the original, translators' choices of what to say are restricted; and bound by the relationships between the languages and cultures involved, translators' choices of how to say it are restricted too. (Malmkjær 2005:x)

Translators have a responsibility to their author to do their best to maintain his distinctive voice when they render his work into another language. Failure to do so changes the

character of the writing, the tone of the narrative, the *voice* of the text. Compare two versions of *Genesis* 37:33, in which Jacob is brought Joseph's many-coloured coat stained with animal blood. Jacob recognizes the coat, assumes his son is dead, and cries:

An evil beast hath devoured him; Joseph is without doubt rent in pieces.
– Authorized Christian Bible (“King James Bible”)

He's been killed! Maybe a dingo got my boy!
– *More Aussie Bible* (Richards 2006)

The alteration to the voice of this text is, of course, evident to the bidialectal reader. If this example had been a case of translation, the monolingual reader would have been dependent on the translator(s) to have got it right, and to have captured the essence of the author's narrative style.

‘Voice’ is, of course, a construct of many factors, and the translator must address both the author's own narrative voice and also the voices he gives his characters. Voice was an important aspect of translating Tzeng Ching-wen. We wanted to capture his own clear, simple narrative voice, but in addition, since character delineation is so central to his method of story telling, the voices of his characters in dialogue or internal monologue had to be heard as diverse and individual. Suzanne Jill Levine (1991) has described a translator as an actor who is obliged to mimic the voice of the author. Our challenge was to become actors and find both Tzeng's voice and the voices of the full cast of his characters in our translation. Here are some examples of decisions and compromises that we made in trying to achieve this.

Let me first give you an example of critical character development in which the establishment of the characters' voices in the translation was particularly difficult because, in the original text, the author was able to take advantage of a bilingual environment and we had only English to rely on. In ‘The Woman Taxi Driver’, the protagonist drives a taxi in Taipei so that her daughter can attend the prestigious school in which she has won a place. In the story, the daughter, as befits the education she is getting, speaks Mandarin; the mother, especially in the rough and tumble of the streets, often resorts to Taiwanese. These language choices mirror the tension between the characters that motivates the story: between the child's self-consciousness about her mother's work and the mother's need to do her job but not embarrass her daughter in front of her school friends. The stage is set when the mother is involved in a fender-bender in front of the school just as the girls are coming out the gate. In the slanging match with the other driver that follows the accident the mother uses Taiwanese, and our choice was to put a very coarse English register into her mouth (*son-of-a-bitch, I'll call the cops, she roars* at the man who collided with her, and crudely threatens him into paying for the damage to her car—a thousand *bucks*); some time later she regretfully thinks about how she spoke and recalls an aunt who told her that Taiwanese was the most unrefined language in the world. In contrast, we chose quite a different and more refined English register to translate her use of Mandarin when she talks her daughter or in her internal monologue about her thoughts, worries, and memories. At the resolution of the story, the child expresses her love and admiration for her mother by telling her a little

tale about a hen that bravely defends her chick from a hawk, and she attempts to tell it in Taiwanese ('which was a bit awkward and not quite smooth'). No footnotes were possible at this dramatic juncture! So we indicated her use of Taiwanese by labelling her Taiwanese mistakes and Mandarin substitutions with the language names: 'She still did not know how to use the Taiwanese *lai-biou* instead of the Mandarin *laoying* for "hawk," etc.

On the matter of endeavouring to remain true to the *author's* voice, in contrast to the voices of the *characters*, let me describe briefly three syntactic decisions that we made to try to mimic the simple and lucid tone of the stories. The first concerned the need to keep English verbal units (main verb and auxiliaries) as simple as possible—they can easily become quite heavy in English. This presented a particular problem in the *Magnolia* stories, in which flashbacks are a frequent narrative technique, and the story lines are a complex interplay of current action and back-stories. In addition, Chinese readers have a high tolerance for using context to sort out this web of interlocking events, but English readers are not as skilled in doing this, and if forced to depend upon it may perceive the narrative as vague or underspecified. The problem, of course, is solved in English with the use of perfective auxiliaries and tense to indicate ongoing relevance of events to later actions, but we monitored our use of these auxiliaries very carefully and tried to balance tense/aspect with contextual cues to keep the English verb phrases as clean and simple as possible.

The second decision concerned sentential adverbials, which Chinese uses much more generously than does English. I dubbed this the *still-yet-again* phenomenon, and ruthlessly weeded out those that sounded redundant in English. Our initial decision to aim for a very close translation could not stand in the face of the need to reduce English sentences like '*Even before* [a car] arrived we had heard its engine *first already...*' if we were to reflect in English the simplicity of Tzeng's Chinese style.

The final syntactic decision concerned the use of contracted forms such as *I'd*, *he'd*, *she's*, *they'll*, etc. The *Magnolia* stories are told either in the first person or from a single consistent third person point of view. While contractions occur quite normally in the characters' dialogue in the English translation, Dr. Lin did not use them in the narrative text, and even though the style of the stories was casual, it never occurred to me to put them in during the editing process. We were both completely satisfied that the tone of the English narrative text was better without contracted forms. To our surprise, one of the first reviewers of *Magnolia* asked Dr. Lin why we had *not* used contractions in these informal stories. Our answer was that we would have found contractions in the narrative to be *too* informal. While Tzeng's love and respect for his characters shines through his stories, he still maintains a small cool, authorial distance from them. The slight formality of the uncontracted forms signals this reserve and keeps faith with his voice.

5. CONCLUSION. Let me conclude this story about the translation of *Magnolia* by quoting Goethe, who set a high goal for translators. It is what Dr. Lin and I hoped to achieve for Tzeng Ching-wen in trying to work as one mind through the sort of decisions and conundrums that I discuss above. We hope that Saint Jerome blessed us.

There are two maxims for translation: the one requires that the foreign author be brought over to us so that we can look upon him as our own; the other that we cross over to the foreign and find ourselves inside its circumstances, its modes of speech, its uniqueness.

(From *Rede zum Andenken des edlen Dichters, Bruders und Freundes Wieland*, 1813, quoted in Malmkjær 2005:10)

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A LINGUISTIC FOSSIL: POSITIVE *ANY MORE* IN THE GOLDEN HORSESHOE

J.K. CHAMBERS
University of Toronto

THE FIRST SIGNIFICANT IMMIGRANTS into the part of Canada known as the Golden Horseshoe were American refugees from New York, New Jersey and Pennsylvania. In Canada, they were known as Loyalists because they actively resisted the battle for independence that their neighbours were waging against their British governors starting in 1776. They made their way to the Niagara border in a steady stream from 1783, when the last British stronghold fell, into the 1790s. On arrival, they were granted parcels of land and a few provisions. The lucky ones found themselves in the Golden Horseshoe, the broad, fertile crescent that bordered the western tip of Lake Ontario. Though it was a hard scramble in the beginning, clearing fields and erecting shelters to protect people and livestock from the cruel winters, the land repaid their labours. In a generation or two, the Loyalists progressed beyond subsistence farming and established market towns with churches and schools, inns for travelers, and stores for bartering or buying goods of many kinds.

Though no one could know it at the time, the region was destined to become the centre of industrial and commercial activity in Canada. It took about 150 years after the first settlers for the region to be called the 'Golden Horseshoe', but it was a name that instantly caught on. The horseshoe part comes from the U-shape, sideways, as the land follows the curve of Lake Ontario (as seen in **Map 1** below). The golden part comes from the relative wealth of the densely industrialized urban sprawl, notably automobile industries in Oshawa, Oakville and St. Catharines, steel mills in Hamilton, shipping in Welland, and all kinds of heavy industry in Toronto, which also houses the main money markets of the country. The 125-km strip of land supports about six million people, one fifth of Canada's population.

1. THE PUZZLE OF LINGUISTIC PRIORITY. There is no logical reason, and certainly no necessity, for the Golden Horseshoe accent to have established itself as standard Canadian English. Other aspects of Canadian settlement history might have led to other expectations. Before the arrival of the Loyalists, the small numbers of English-speaking settlers in Canada came from the same Anglo-Celtic stock that had made their way in much greater numbers into the thirteen colonies that became the United States. In the politically undifferentiated continent before the American declaration of independence, the transplanted English accents all developed from eighteenth-century Great Britain. The English spoken in the part that would become Canada had exactly the same roots as in the United States. The Loyalist movement into Canada brought a linguistic infusion directly from the United States at the very moment when political separation might have been expected, under other circumstances, to invoke linguistic separation.

The new-born United States had already developed regional accents by 1776. Travelers who were worldly enough could distinguish at least three distinctly different ones in the New Englanders from Boston and the other northeastern towns, Midlanders from Philadelphia and environs, and Southerners from Virginia. Southerners appear to have figured almost not at all in the Loyalist movement into Canada, but New Englanders figured very prominently and in fact greatly outnumbered the Midlanders. When the first shots in the War of Independence were fired in Massachusetts, thousands of New Englanders fled to the Atlantic colonies to the north, New Brunswick, Prince Edward Island and Nova Scotia. Their numbers overwhelmed the established settlers. Some of the New England Loyalists booked passage to the Old Country from the maritime ports. Others settled in the colonies, and in Lunenburg County south of Halifax, Nova Scotia, they became the founding population and established an enclave with a transplanted variety of the New England accent (Trudgill 2001).

Many other New Englanders bided their time and eventually made their way inland to take up grants of freehold land on the St. Lawrence River and along the north shore of Lake Ontario and beyond that into southwestern Ontario. Their presence is noted by travelers who kept journals. One traveler, Benjamin Mortimer, wrote, 'Towards Niagara... the inhabitants are altogether from Pennsylvania & New Jersey. Here [in southwestern Ontario] we heard of none but New Englanders' (Doyle 1980:30). Mortimer made that journal entry in 1798, when the immigrants had been in the area for no more than fifteen years. One of the remarkable puzzles about Canadian linguistic history is that if Mortimer had traveled that same route a decade or so later he might not have heard the New England accent at all, and only from the oldest generation. If he had mentioned it at all, it would have been to note the quaint archaisms of the old-timers.

The New England accent did not stick in southwestern Ontario or anywhere else in inland Canada. It disappeared, and it left no impression. For that, we have the testimony of William Canniff, the first great native-born Canadian historian, who made this observation:

The loyalist settlers of Upper Canada were mainly of American birth, and those speaking English, differed in no respect in their mode of speech from those who remained in the States. Even to this day there is some resemblance between native Upper Canadians and the Americans of the Midland States; though there is not, to any extent, a likeness to the Yankee of the New England States (Canniff 1869:363).

Even if Canniff had not made this observation, we would know it to be true from contemporary evidence. Canniff wrote his history in 1869, almost exactly a century after the Loyalists arrived. But even today, 135 years after Canniff, we would arrive at the same conclusion. Canadian English bears some resemblance to the small-town accents in Pennsylvania and upstate New York and the places populated originally by them such as Ohio and Michigan. It bears no resemblance to New England speech.

Obviously, the New England accent of the Loyalists from that part of the United States was not perpetuated in the speech of their children. The homogenization process that takes

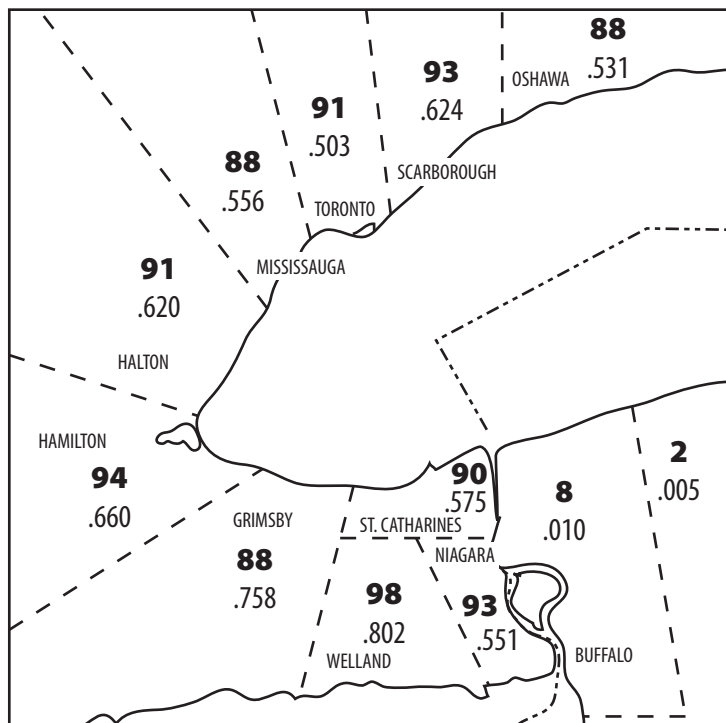
place in the first native generation of any newfound colony eliminated all traces of it. Again, we can rely on the firsthand witness of Canniff: 'Listening to the children at any school, composed of the children of Englishmen, Scotchmen, Americans, and even of Germans,' he said, 'it is impossible to detect any marked difference in their accent, or way of expressing themselves' (1869:363–64). The accent that prevailed was the one based on Midland features. New England-born parents heard their own children speaking an accent different from their own.

2. THE BORDER AS BASTION. Canada became a political entity in 1776 by default because the American Revolution succeeded in establishing the United States as an autonomous republic. Canada remained a colony under British governors, or actually several colonies until 1867 when the five most populous ones were federated as the Dominion of Canada. Unlike the United States, which came into being with a bang, so to speak, Canada came into being like a work in progress, annexing the four vast western provinces and two even vaster territories in 1870 and 1885, adding the tenth province, Newfoundland, in 1949, and splitting off the territory of Nunavut from the Northwest Territories in 1999.

Canada and the United States share many features as a result of their common eighteenth-century British provenance and geographical proximity. Chief among these are the features that (broadly) distinguish the North American branch from the British branch of the global English tree, including r-fulness, the unrounded vowel in the LOT lexical set, absence of yod /j/ in *tune*, *dew*, *news* and similar words, voicing of /t/ before unstressed vowels in *city*, *sitting*, *writer* and similar words, the low front vowel /æ/ in *can't*, *half* and *calf*, and a host of lexical shibboleths (*store* for *shop*, *fix* for *mend*, *elevator* for *lift*, and so on).

Canadian and American English also differ from one another in numerous ways. Most differences are quantitative rather than qualitative, marked by a greater frequency of a particular variant on one side of the border rather than by its complete absence. There is a current tendency for a small set of distinctive features to spread across the borders (Chambers 1999), notably the merger of vowels in the lexical sets LOT and THOUGHT (often known as the *cot/caught* merger), a standard feature of Canadian English that for 50 years has been spreading rapidly in the American Midwest all the way to California.

Interaction between the two countries is complex but constant, and that ensures that linguistic differences will be mostly measured by degree rather than kind. One of the more dramatic differences is illustrated in **Map 1** (overleaf). The map shows the Golden Horseshoe starting in the northeast at Oshawa and moving around the tip of Lake Ontario to Niagara, at the border. On the American side at Niagara, designated NY1 and NY2 are, respectively, the frontier region (including Buffalo, Lewiston and Niagara Falls, NY, among other cities) and more distant upstate cities (Rochester, Ithaca, and others). The sub-divisions on the Ontario side are determined by central places, that is, the urban hubs, including Scarborough, Toronto, Hamilton, St. Catharines and Welland. The survey materials are from the Golden Horseshoe database of the Dialect Topography of Canada, a national project in sociolinguistic dialectology that so far covers seven regions (available on-line at <http://dialect.topography.chass.utoronto.ca>). The Golden Horseshoe project surveys 935



Map 1. Pronunciation of *shone* in *The sun shone yesterday* with /a/, not /o/, in the Golden Horseshoe including the Canada-U.S. border at Niagara. Large numbers are percentages, and small numbers are factor weights.

women and men between the ages of 14 and 90 in the Ontario regions and 85 in the New York regions.

The variable charted in **Map 1** is the pronunciation of the past tense of *shine*, as in *The sun shone yesterday*. The variant is the occurrence of the low back unrounded vowel /a/ in *shone*, that is, rhyming with *gone*, rather than the mid back rounded vowel /o/, rhyming with *bone*. The large bold numbers are percentages and the smaller three-place figures under them are factor weights from GoldVarb, the multivariate regression program (in which .500 and above is the threshold favouring the dependent variant).

The numbers show a cataclysmic change at the Canada-U.S. border. The Ontario side shows an overwhelming preference for *shone* rhyming with *gone* in proportions that range from 88 percent to 98 percent (averaging 92 percent). The New York side shows an equally strong preference for the other variant (averaging 94 percent), *shone* rhyming with *bone*. This variable provides a shibboleth that distinguishes Canadians and Americans with almost complete certainty.

Dialect Topography has found several other shibboleths. They include *anti-* and *semi-* with final [i] in Canada and [aj] in the U.S., *avenue* with final [ju] in Canada and [u] in the U.S., *lever* rhyming with *beaver* in Canada but rhyming with *never* in the U.S., lexical items

such as *running shoes* in Canada and *sneakers* in the U.S., *tap* rather than *faucet*, *wash cloth* rather than *face cloth*, and *zed* as the name of the last letter of the alphabet in Canada but *zee* in the U.S. The differences from one side of the border to the other are not as great as for the *shone* variants, but they are significant for all of them.

3. A SYNTACTIC VARIABLE. The principal variable I discuss from here on in this paper is not a shibboleth by any means. In fact, it is a linguistic feature that, as we shall see, is recessive in the Golden Horseshoe to the point where evidence for it is getting hard to come by. That is one of the features that make it interesting. It is, as I will show, the last incontrovertible remnant of the old historical tie between the Golden Horseshoe and Pennsylvania, the original home of so many of the Loyalists. But it is intrinsically interesting in its own right both as a syntactic variable, rare in English dialect studies, and for its unique distribution as a dialect feature.

First I will talk about the variable in linguistic terms. It is called 'positive *any more*'. Besides its rarity as a syntax variable, it also has interesting semantic attributes. It is a construction that is used and understood by a small minority of English speakers and thus carries an exotic aspect (though not to me, as a native speaker of the dialect). After considering it grammatically, I will talk about its currency (or lack of it) in the Golden Horseshoe based on the copious evidence from the Dialect Topography survey. Finally, I will look at its highly circumscribed distribution in the varieties of English around the world. Its provenance in the Golden Horseshoe preserves an old historical link in much the way that petrified ulnae link dinosaurs to flight, keeping in mind, of course, that linguistic fossils are less hardy than archaeological ones. For one thing, with linguistic fossils the medium is the message, much more transient than rock or amber. Unlike petrified ulnae or any other fossils preserved in rock, positive *any more* is preserved in grammars, which are softer stuff. Traces of it in the Golden Horseshoe might have been lost entirely if we had waited a generation longer to go looking for it.

4. USER'S GUIDE TO POSITIVE *ANY MORE*. Here is the most recent sentence with positive *any more* in my files (spoken by a chip-truck vendor in northern Ontario to Elaine Gold in July 2006):

'You get a lot of funnel cakes at fairs and exhibitions anymore.'

The most frequent reaction of people to sentences like this (removed from their conversational context) is to wonder what they mean. In context, of course, such sentences attract less attention to themselves because their meaning, or at least the speaker's intention, is clarified by the conversation. They often pass by unnoticed.

Another characteristic that makes positive *any more* sentences relatively inconspicuous is that they are rare in writing. Here is an example from Bill James's *Guide to Baseball Managers from 1870 to Today*:

If you listen carefully the next time a manager gets fired, you will hear somebody say how quick ‘they’ are to fire the manager anymore.

Here is another example, this one from tough-guy dialogue in the murder mystery *Q is for Quarry* by Sue Grafton (2002:94):

‘Anymore, you lay a hand on a chick, she blows the whistle on you.’

Its rarity in writing undoubtedly accounts for the fact that I have never found an example of it in pioneer journals or travel diaries, though, as we shall see, it was certainly part of the grammatical repertoire of at least some of the pioneers.

The puzzlement about positive *any more* sentences, for those who find them puzzling, arises from the fact that their syntactic context lacks a negative element. In standard grammars wherever English is spoken, the adverbial *any more* is a negative polarity element. It typically occurs in sentences like the following, and in such sentences it is readily understood by everyone:

You don’t find many greased pigs at fairs and exhibitions anymore.

Jimmie never calls me anymore.

In standard grammars, the adverbial *any more* is licensed by the presence of negative elements such as *-n’t* and *never* in the clause. Semantically, the notion of negation in the clause turns out to be more fluid and flexible than many grammarians would like to believe. For many years I have collected sentences that I assumed were positive *any more* only to discover that people find them perfectly understandable. It turns out that the negative element can be implicit (to some degree) rather than explicit, and can still license *any more*, as in these sentences:

Jimmie seldom calls me anymore. (seldom = almost never)

‘I get very little junk mail anymore.’ (get very little = don’t get much) (Andy Rooney on ‘Sixty Minutes,’ 2006)

Although these sentences do not include an overt negative marker, they are easily paraphrased with overt negatives (*seldom* = ‘almost never’, *get very little* = ‘don’t get much’) and that implication is apparently strong enough to provide the negative context for standard speakers. The most surprising example of a sentence that appeared to be positive *any more* but turned out to be interpretable by standard (negative *any more*) speakers occurred in a ‘Peanuts’ comic strip, in which Linus says:

‘I’m scared to play **any more**, Charlie Brown.’

The verb *scared* perhaps has a negative connotation but, if so, it lacks a ready paraphrase (= 'I'm not willing to play any more'? 'not happy about playing any more'? etc.). Nevertheless, standard speakers find it quite transparent. The gradation of the notion of negation in the clause as indicated by the licensing of *any more* seems to stretch semantic definitions and goes well beyond the presence of overt negative lexemes.

Incontrovertible examples of positive *any more* sentences, like the following ones, always tax the processing powers of people with standard grammars:

Mechanics charge a lot any more.

I get a lot of junk mail any more.

Sentences like these, incidentally, sometimes also tax their patience. Questions in the Dialect Topography questionnaire on positive *any more* sentences (as cited in the next section) tended to elicit vituperative marginalia from many otherwise mild-mannered respondents (including comments like 'Bad grammar,' 'This is stupid!' and 'No one in their right mind talks like this'). As a native speaker of positive *any more*, I found those reactions puzzling at first and amusing after a while. On analysis, I came to realize that the meaning, though it may be transparent to people with that construction in their dialects, is not exactly straightforward. The closest paraphrase for positive *any more* is 'nowadays':

Mechanics charge a lot any more. = Mechanics charge a lot nowadays.

I get a lot of junk mail any more. = I get a lot of junk mail nowadays.

In colloquial use, sentences like these occur in a relatively restricted semantic-pragmatic context. For one thing, they presuppose a change of state, so that it is necessary in the sentences above that the rates charged by mechanics have risen recently and that the amount of junk mail has increased recently. For another thing, they usually presuppose that the turn of events is unfavourable, so that the speaker is unhappy about the mechanic's bill and the bogus get-rich-and/or-beautiful appeals on e-mail. These presuppositions may seem obvious in these sentences, but they also hold in a sentence like:

John smiles a lot any more.

Here, the presupposition is (1) that John formerly smiled much less than he does now, and (2) that his smiling is somehow tainted, perhaps phony or unnatural or deranged. (For further discussion on these and other aspects of positive *any more*, see Chambers and Trudgill 1991.) Like most grammatical constructions, positive *any more* carries its own nuances. As such, it is probably not the kind of construction that is likely to be mastered by grown-ups coming late to the language. Besides, the fact that it is rarely heard and largely unwritten, further limits learnability in the acquisition process. Indeed, evidence from the Golden Horseshoe suggests that it is the kind of construction that can be wiped out in a mobile, expansive dialect region, as we shall see in the next section.

5. A RECESSIVE FEATURE. Four questions on the Dialect Topography questionnaire inquire about positive *any more*. My expectation in the early 1990s when I was assembling the questionnaire was that positive *any more* would prove to be a robust variable across Canada, showing up strongly in southern Ontario and more diffusely in the Western provinces, where southern Ontarians predominated in the founding population and consequently carried the accent as the Canadian standard. My expectation was partly self-delusion, I now realize. As the descendant of a line of positive *any more* speakers in the Niagara Peninsula and my wife from a similar line of descent in southwestern Ontario, I naturally assumed that positive *any more* speakers were plentiful. My expectation was undeterred, I now realize, by the fact that whenever I talked about positive *any more* in classes at the University of Toronto, I never found more than two or three students who knew what the sentences meant without being told, and that as years went by there were usually none.

Three of the four questions on the Dialect Topography questionnaire asked respondents about the meaning of positive *any more* sentences. There are 72 other questions on the questionnaire, and the four on positive *any more* are separated by a couple of questions on unrelated matters (as shown by the numbers). Here I have marked the correct answers and the percentage of Golden Horseshoe respondents who chose it:

48. Someone said, *John smokes a lot any more*. Does this mean that
☐ John hasn't been able to cut down, let alone stop?
44.5 % in GH or ☒ John wasn't smoking much for a while but now he is?
 or ☐ John has almost quit?
50. What does *any more* mean in *John smokes a lot any more*?
☐ still
50.5% in GH or ☒ nowadays
 or ☐ negative
54. Someone said *Harry likes rock music any more*. Does this mean that
☐ Harry's turned off rock?
36.8% in GH or ☒ Harry's finally seen the light?
 or ☐ Harry's always been a great rock fan?

Responses are erratic, ranging from 36.8 percent correct to 50.5 percent. The correct responses to the third question are considerably fewer but that was to be expected from the obscurity of the question, which is couched in idioms ('turned off', 'see the light'). I took that question and the others from a questionnaire that Labov was using in Philadelphia (1972:68–69), in hopes that we might eventually compare our results. Labov had discovered positive *any more* when he moved to Philadelphia from New York in the early 1970s. It was completely unknown to him before that, and it became an early preoccupation for him and his research team (Labov 1972, Hindle 1975, Hindle and Sag 1975). It was, for the moment, a hot topic.

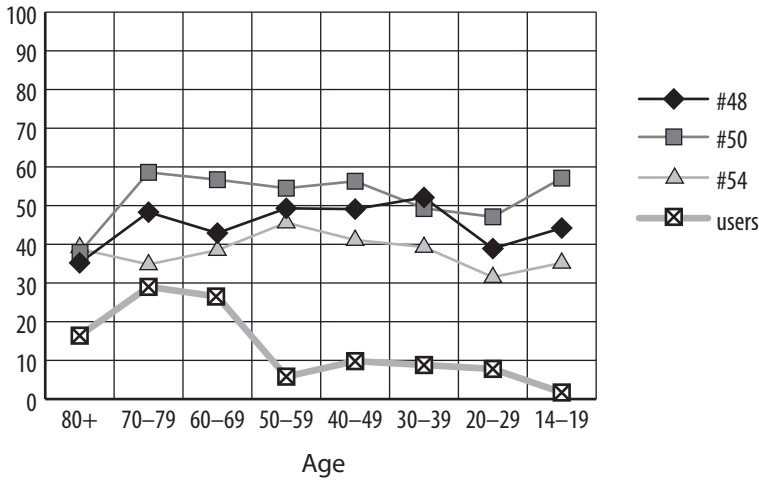


Figure 1. Results for four questions about positive *any more* according to the age of the respondents in the Golden Horseshoe.

The fourth question on the Dialect Topography questionnaire asked respondents about their familiarity with the construction. The pattern of responses is attached to the question:

51. That sentence, *John smokes a lot any more*, does it sound like something
 9.7% in GH ☐ you might say under the right circumstances?
 17.8% in GH or ☐ others might say though you wouldn't?
 72.4% in GH or ☐ no one you know would say?

This result was certainly depressing for someone whose expectations were that positive *any more* would have fair currency in the region. At first, I entertained the hypothesis that people were deceiving themselves by failing to recognize their own use of it, blaming it on the rarity of experiencing it in writing. What gave me a plausible basis for that hypothesis was the fact that many of the respondents could correctly identify its meaning—many more, in fact, than were willing to admit to using it. That argument disintegrated when I correlated the correct answers for all three of the interpretive questions and discovered that respondents typically got one or two right but very few got all three right. There was obviously guesswork involved in the responses. Bolstering that conclusion was the cumulative evidence of real-world experience, in which positive *any more* sentences were almost never heard in ordinary speech and almost everyone I spoke to about them, not only my students, were simply baffled by them.

The evidence shows clearly that positive *any more* is recessive in the Golden Horseshoe. If the erratic pattern in identifying meanings and reports of fewer than ten percent as users were not convincing, correlation the responses with age clinched it. **Figure 1** shows the age of respondents on the abscissa, with octogenarians on the left and teenagers on the right, and the other groups ranked by decades in between. The age correlations reveal an odd but

explicable discrepancy. The three lines at the top are the percentages of correct interpretations for each of the three sentences (identified in the legend as 48, 50 and 54). The lines are relatively flat, indicating a fairly consistent propensity for discerning meanings regardless of age. The teenagers, that is, are no worse than, say, the 60–69-year-olds at discerning the correct meanings of the sentences. By contrast, the bottom line shows the proportion of respondents who admit to using positive *any more* sentences, and that line is not flat. In fact, it shows a decline from the oldest to the youngest, from a high of 29 percent, almost three of ten, for the 70–79-year-olds to a low of one percent for the teenagers. The trajectory of the line unmistakably shows a change in progress, and the change is clearly the decline of positive *any more* to the point of virtual nonexistence on the speech of the youngest respondents.

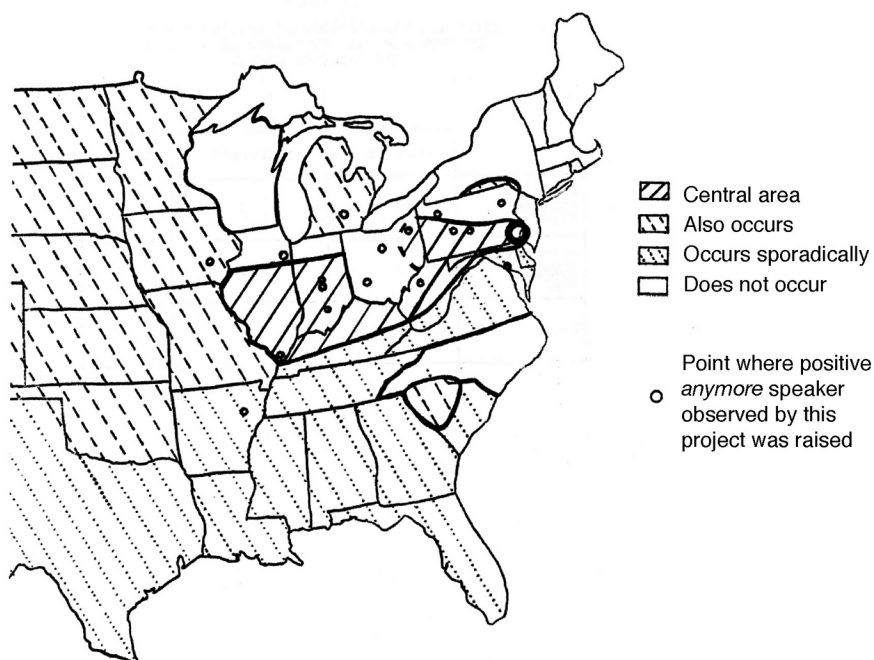
The discrepancy between the relatively consistent ability to interpret the meanings of the sentences regardless of age indicates that respondents are fairly good at guessing the meanings of positive *any more* sentences when they are forced to make a choice. If they were choosing randomly, they would get the right answer one time in three. They do better than that, even when they are faced with the rather obtuse choices in sentence 54.

Looking more closely at the change in progress in **Figure 1**, native competence in the use of positive *any more* declined cataclysmically for the 50–59-year-olds, with a drop of more than 20 percent. In real time, the 50–59-year-olds were born between 1932 and 1941. Their formative years were roughly the 1950s. In Canada, and especially the Golden Horseshoe, those years marked the great post-War immigration. The immigrants who arrived by the thousands were ethnically and nationally diverse. Culturally, one of the consequences was that these immigrants and their Canadian-born children would eventually overwhelm the Anglo-Celtic hegemony that had been the result of the great Victorian immigrations of the previous century. Linguistically, the overwhelming consequence was the decline of numerous variants that were Briticisms that once represented a kind of Canadian gentility in an accent known as ‘Canadian Dainty’ (Chambers 2004).

Another linguistic consequence, heretofore unnoticed, was the decline of positive *any more*. It was a feature that never represented gentility of any kind in Canada, maybe the opposite when it was noticed at all, but it was part of the heritage of the very first Canadian immigration.

6. A LINGUISTIC FOSSIL. The reason that Labov and his students became intrigued by positive *any more* after he moved to Philadelphia is because they found themselves in its heartland. Its extraordinary frequency in Philadelphia specifically and in eastern Pennsylvania generally was noted several years before Labov by William Eitner (1949). In his discussion, Eitner assembled random reports of positive *any more* that had accumulated in *American Speech* and other periodicals in an attempt at putting a geographic perspective on its distribution in the United States. Hindle (1975:42) then used Eitner’s summary and added his own points for recent observations to make **Map 2** (his Figure 1). Although **Map 2** necessarily employs pre-computerized cartography, it has the homespun charm of a Gramma Moses painting in addition to making its dialectological point.

The secondary region (labeled ‘also occurs’ on Hindle’s map) is a geographic extension of the focal area, splaying out into the Upper Peninsula of Michigan and the upper Midwest.



Map 2. Distribution of positive *any more* showing regions identified by William Eitner and points where users originated in the University of Pennsylvania project (Hindle 1975:42).

These are places where westward expansion brought Midlanders into contact with Northerners. The presence of Northerners in the demographic mix, especially Yankees from New England, where positive *any more* does not occur, apparently dilutes its frequency.

Eitner proposed that positive *any more* had been imported from Scotland or Northern Ireland to the American Midlands in the first instance. I questioned his proposal based on linguistic evidence (Chambers & Trudgill 1991:265). The Scotch-Irish sentences he cited as evidence are these:

There's no herring in it the day, but there'll be herring any more.

It's warm for the time of year an it'll be warmer any more.

While it is true that these sentences contain instances of *any more* in positive contexts, they bear no resemblance to authentic positive *any more* sentences in either denotation or connotation. *Any more* cannot be paraphrased in these sentences by 'nowadays' (but instead can be paraphrased by 'soon'). Further, they do not presuppose a change of state (but in fact they assert the former state). And they carry no implication of disapproval. I think it is fair to say that no North Americans with positive *any more* in their grammar would admit these sentences as plausible exemplars.

It seems to me that claims about Scottish provenance are also disputable on geographic grounds. The founding population of the American South was more heavily concentrated with Scots than any other region, and Eitner's distributions show that the American South has only sporadic occurrences. If positive *any more* was carried to the New World by Scots, it seems reasonable to expect that it would not only occur in the South but would have its focal point there. Its distribution contradicts that expectation.

In the absence of other evidence, it seems to me that positive *any more* must be considered an independent development in New World grammar rooted in eastern Pennsylvania and disseminated westward into the continent by Midland migration. Such a scenario does not rule out its origin as a minor dialect form in some pocket of Britain that became upwardly mobile when it arrived in America. Several New-World features have that history (notably, 'I guess...' as a modal clause alongside standard British forms like 'I think/believe/suppose...'). However, the British pocket that might have been the source of positive *any more* has never been located in three centuries or so of British orthoepy and dialectology.

Canada obviously escaped Eitner's notice as a region with positive *any more*, and Hindle's too. Again, its omission is obviously an accidental gap. The evidence inferable from the 70-odd years of apparent time in the Dialect Topography databases shows positive *any more* in active use by almost 30 percent of the people in the Golden Horseshoe in the first half of the twentieth century, that is, by the people who were over 60 at the time of the survey (as in **Figure 1** above). Their usage is measured by self-reports after the precipitous decline of the construction in the 1950s, suggesting that, if anything, the figure of 30 percent might be underreported. Its presence in the region, though far from robust, is unmistakable.

The apparent-time evidence also shows quite clearly that its day is done. Positive *any more* is a relic any more, that is, nowadays. The traces of it that we found in the Golden Horseshoe survey were, in effect, its fossilized remains. We know how it got there in the first place. As the traveler said in 1798, 'Towards Niagara... the inhabitants are altogether from Pennsylvania & New Jersey,' eh. The surest sign of the presence of Pennsylvanians as founders of the region is the grammatical idiosyncrasy known as positive *any more*. Subsequent waves of immigration could not succeed in changing the accent the Pennsylvanians and other Midlanders planted in the Golden Horseshoe but they did apparently succeed in eliminating positive *any more*. If we had gone looking for it two decades later than we did, we might not have found it at all, or at least not enough instances to make a blip on a line graph.



ACKNOWLEDGEMENTS. I am grateful to Peter Reich, organizer of LACUS 33 and my colleague at the University of Toronto for many years, for inviting me to talk about 'Dialect in the Niagara Peninsula' and especially for arranging the talk to take place in a Niagara vineyard as part of the conference excursion. It is an uncommon privilege for a linguist to find himself in a professional setting where he is expected to talk about his natal territory and almost unheard of for him to get to talk about it while standing in it. This article is

derived from that talk, shorn (as far as possible) of anecdotes, jingoism and sentimentality. It benefited from comments by many excursioners including Marshall Chasin, Sydney Lamb, Dennis Preston, Ron Smyth, Bill Spruiell, Kara Van Dam, and especially Lois Stanford. Thanks also to Peter Birt, Stefan Dollinger and Elaine Gold for positive contributions to my positive *any more* file.

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CROSS-LINGUISTIC VARIABILITY OF PROSODIC CHARACTERISTICS: A HARD-SCIENCE APPROACH

MASAHIKO KOMATSU
Health Sciences University of Hokkaido

VARIABILITY IN THE PROSODIC CHARACTERISTICS OF LANGUAGES has been referred to as prosodic types, such as the types of rhythm and lexical accent.¹ These are exemplified by stress-timed, syllable-timed, and mora-timed rhythms (e.g. English, Spanish, and Japanese, respectively); and stress accent, pitch accent, and tone (e.g. English, Japanese, and Chinese, respectively). However, such variability has not been worked on in terms of hard-science linguistics (Yngve & Wąsik 2004). The present paper reveals the acoustic, or physical, correlates of the variability.

Preceding studies have not sufficiently documented the acoustic correlates of the variability. Since Pike's (1945) proposal of stress- and syllable-timed rhythms, the isochronic recurrence of stress/syllable in the speech signal has not been found. Recent research (e.g. Ramus *et al.* 1999, Grabe & Low 2002) attributes rhythmic difference to syllable structure complexity: their analysis is not hard science because it imposes phonemic units on streams of speech. As to pitch analysis, most research has focused on the function of pitch, and there are few that deal with cross-linguistic variability of acoustic patterns. Recently, the pitch contours of various languages have been acoustically analyzed by INTSINT (INternational Transcription System for INTonation; Hirst *et al.* 2000), which adopts hard-science methodology but unfortunately has not been extended to tonal languages.

The question asked in this paper is what the prosodic types are in terms of hard-science linguistics. It attempts to define prosody in terms of acoustics. The paper introduces an acoustic model, called the source-filter model, followed by three phonetic experiments that show an approximate correspondence between the source component and the prosodic characteristics.

1. MODELS: PROSODY AND THE SOURCE-FILTER MODEL. The conceptual question asked in this article is whether the source component of the source-filter model corresponds to prosody. This is the question about the correspondence between the acoustic and linguistic levels. It is a significant question in the acoustic definition of prosody.

Figure 1 (overleaf) shows the simplified correspondence between the articulatory, acoustic, and linguistic models. Note that the figure is simplified for illustration, and that the actual correspondences between the features in different models are not as simple as drawn in the figure. The articulatory model states that, when humans utter speech, especially vowels, the voice source is created at the larynx, is modulated by the vocal tract, and results in the speech sound. This can be modeled by an acoustic model called the source-filter model, in which the source is processed by the filter, resulting in the speech signal.

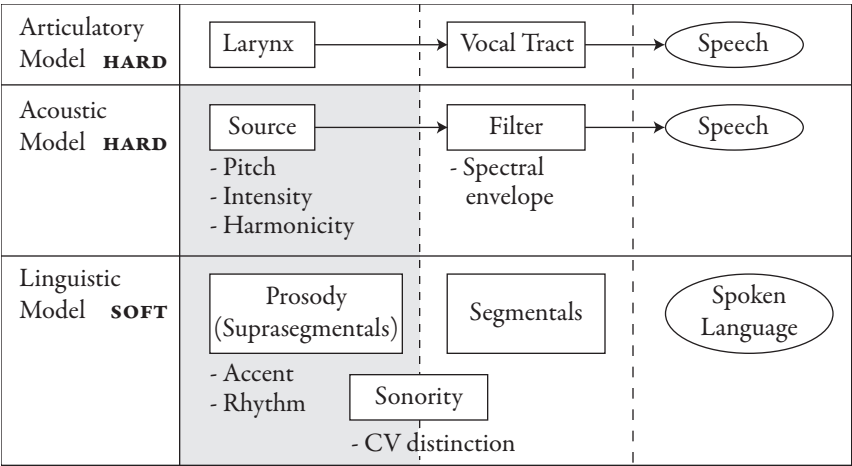


Figure 1. Approximate correspondence of articulatory, acoustic, and linguistic models. The shaded area indicates the correspondence examined in this article.

The source consists of three physical elements: pitch (how high a sound is), intensity (how loud² a sound is), and harmonicity (how periodic a sound is, or how voiced/voiceless a sound is); and the filter determines the spectral envelope of the sound in the frequency domain. Very naively, prosodic, or suprasegmental, features in the linguistic model seem to involve height and loudness of the speech signal controlled by the laryngeal activity: the tone and accent systems seem to involve height and loudness, and rhythm seems to involve the temporal variation of loudness. On the other hand, segmental features, i.e. phoneme distinctions, seem to be related to spectral patterns determined by the vocal tract shape, or the movement of articulators. However, their correspondence to each other is actually not so simple. For example, in the recognition of phonemes, it is known that various acoustic cues interact, including not only the spectral pattern but also pitch and intensity. So far, the acoustic contributors to prosodic features have not been thoroughly examined. This article reports on three experiments that investigate whether, or how well, the source elements of the acoustic model represent linguistic prosody. The articulatory and acoustic models are in hard science, and the linguistic model is in soft science; thus, the article discusses the correspondence between soft science and hard science.

2. EXPERIMENT 1: PERCEPTION OF JAPANESE CONSONANTS WITH SOURCE FEATURES. Sonority is a linguistic feature that approximately represents syllable shapes (see Sonority Sequencing Principle (Clements 1990)). Assuming that rhythm is, even if partly, the reflection of syllable structures, it follows that acoustic properties that represent sonority contribute to the constitution of rhythm. The sonority feature is ambivalently suprasegmental and segmental by nature. On one hand, it represents syllable shapes, and consequently contributes to rhythm. On the other hand, it is closely related to the articulatory manner of segments, and as a result, it partially represents some phoneme classes and phonotactics.

Consequently, the acoustic properties that represent sonority contain both suprasegmental and segmental properties. Theoretically, it is impossible to completely separate suprasegmental and segmental properties at the acoustic level. This section discusses whether the source of the source-filter model represents sonority.

An experiment on Japanese consonant perception was conducted with the linear predictive coding (LPC) residual signal, which represents the source component of the speech signal (Komatsu *et al.* 2000). From the speech samples of 17 Japanese /C/+a/ syllables ([ka], [ga], [sa], [dza], [ʃa], [dʒa], [ta], [da], [tʃa], [na], [ha], [ba], [pa], [ma], [ja], [ɾa], [wa]), the source signal, called the residual signal, was extracted by an LPC-based inverse filter (sampling rate: 16 kHz; order of LPC: 22). Their intensity was adjusted to match the original samples. Their spectrum was tilted at -6 dB/oct to make it sound like speech rather than noise. These signals were presented in perceptual experiments to 15 native speakers of Japanese.

The correct identification rates of phonemes and major classes were obtained from the participants' responses. Major classes are the categories corresponding to the sonority ranks: obstruent, nasal, liquid, and glide, from low to high sonority (Clements 1990). The identification rates were calculated in such a way that, if [ka] was perceived as [ta], it was counted as wrong for the identification rate for phonemes, but counted as correct for the identification rate for major classes because both consonants were obstruents. The identification rate of major classes was high (66.4%) while that of phonemes was low (20.0%). Considering the fact that the identification rate of phonemes cannot be as low as the chance level ($1/17 = 5.9\%$) because the sonority works as a cue to the manner of articulation, the results indicate that segmental information, such as cues for phoneme identification, was effectively suppressed.

To investigate how sonority is represented in the source, the perceptual results were analyzed with Multi-Dimensional Scaling (MDS) (Komatsu *et al.* 2002). In the analysis procedure, a confusion matrix of stimulus-response was created from the results of the consonant perception test. The confusion pattern was regarded as the consonants' similarities in the source. This confusion matrix was then subjected to an MDS procedure.

The analysis showed that sonority can be located in a multi-dimensional perceptual space and that the dimensions of the space correspond to both acoustic parameters and phonological features. Although the fit of the data was not satisfactory, the result showed that the consonants can be modeled in a 3-dimensional perceptual space according to their sonority ranks. As seen in **Figure 2** (overleaf), consonants with the same sonority rank clearly tended to cluster together: voiceless plosives, voiceless fricatives, voiced obstruents, and nasals/glides gathered together. The dimensions of the space could be related to acoustic measurements and phonological features (see Komatsu *et al.* 2002). The result showed that sonority can be mostly defined within the source.

To summarize, Japanese consonants are only partially recognized in the source features: the source does not include segmental features but includes sonority features. Segmental and prosodic features are generally ideologically distinct in soft-science linguistics, but their correlates cannot be completely separated in hard-science acoustics. The source features include intensity and pitch, key features for prosody. They also contain the information on

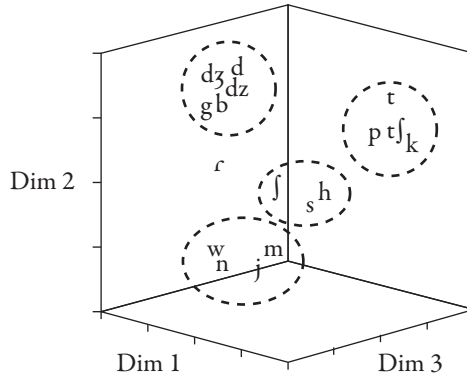


Figure 2. Three-dimensional analysis of consonant perception in the LPC residual signal (altered from Komatsu *et al.* 2002).

sonority, which is necessary for syllable structure, but do not contain the information on phonemes. It concludes that source is a good approximation of prosody.

3. EXPERIMENT 2: ANALYSIS OF SOURCE FEATURES. Acoustic measures quantitatively representing the accent and rhythm types were sought (Komatsu & Arai 2003, Komatsu & Miyakoda 2006). Several proposals are made about acoustic elements and their characteristics. Acoustic elements (what to analyze) are the values that are obtained by measuring the speech signal, i.e. pitch, intensity, and harmonicity. Thus they constitute the characteristics of prosodic types. Acoustic characteristics (how to analyze) can be classified into global characteristics (e.g. the mean and standard deviation of pitch) and local characteristics (e.g. stylized pitch lines, harmonics-noise plot, average syllables). Specifically, the importance of local characteristics is discussed in this section. Although the acoustic correlates of prosodic types have not been identified, several prospective candidates are proposed.

It is proposed that pitch is associated with accent types and that intensity and harmonicity are associated with rhythm types. Accent types are expected to be characterized by pitch, following Eady (1982). Rhythm types are, according to Ramus *et al.* (1999), characterized by the variations of consonant durations, the proportion of vowel durations, etc. Here, intensity and harmonicity are adopted as acoustic measures indicating the degree of **consonantal** and **vocalic**. Vocalic segments in speech have greater intensity, and consonantal, less intensity. Vocalic segments have higher harmonicity, and consonantal, lower harmonicity.

Of the 11 languages included in a multilingual speech corpus (Itahashi 2002), Chinese, English, Japanese, and Spanish were chosen as languages differing in prosodic types. Speech samples in the corpus, the reading of the text ‘The wind and the sun’ in each language, were used for analysis. They were approximately 30 seconds long on average. They were read by native speakers of each language: Chinese 6 males and 7 females, English 3 males and 4

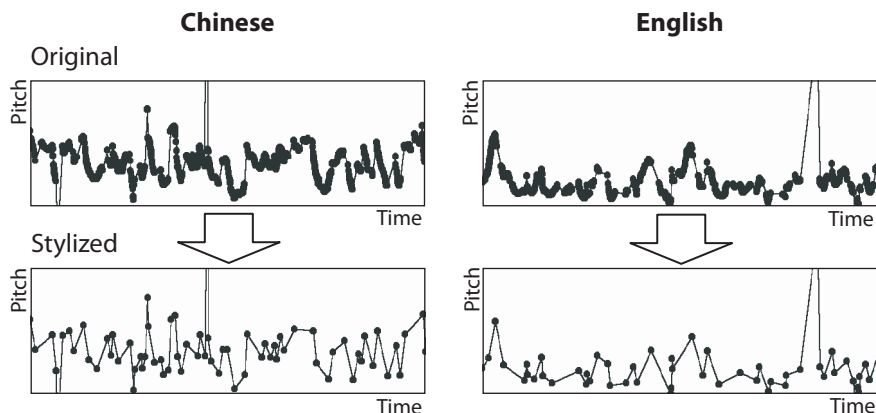


Figure 3. Stylization of pitch (altered from Komatsu & Arai 2003).

females, Japanese 6 males and 6 females, and Spanish 4 males and 5 females. All of these data were used unless otherwise noted. The data format was 16 kHz, 16-bit.

Praat Version 4.0.18 (Boersma & Weenink 2002) was used to extract pitch, intensity, and harmonicity from the speech signal. The analysis was carried out frame by frame at a time step of 10 ms. (Henceforth, each analyzed section in speech is called a frame; in other words, frames were shifted by 10 ms in the analysis procedure.) Stylization of pitch by line segments was also conducted using Praat. The output of Praat was further processed for graphic representation and statistical calculation. If the frames that did not have an amplitude above $\frac{1}{10}$ of the global maximum continued for 200 ms or more, they were regarded as pauses and eliminated from the analyses.

First, local shapes of pitch change were investigated. Original pitch contours were stylized by line segments (resolution: 2 semitones), as illustrated in **Figure 3**. **Figure 4** (overleaf) shows the distribution of duration and pitch change of stylized line segments (3 males and 3 females for each language). Each dot represents a line segment. Dots with larger values of time (x -axis) indicate longer line segments; that is, pitch changes slowly or does not change for a long period of time. Dots with larger values of pitch change (y -axis, positive or negative) indicate a quicker change of pitch (rising or falling). Note that extreme values of pitch change (e.g. greater than 1 or less than -1 on the y -axis) may have been caused by pitch estimation errors.

Figure 4 shows that Chinese has many rapid changes in pitch. In contrast, English has many slow changes. Japanese shows a characteristic pattern between Chinese and English. Spanish seems similar to English but may have more quick and small changes.

Figure 5 (overleaf) shows the instantaneous intensity of harmonics-noise. Ramus *et al.* (1999) claim that languages of different rhythm types have different proportions of consonant and vowel durations in speech. In **Figure 5**, the amplitudes of harmonics and noise were plotted to see the distribution of consonantal and vocalic frames (3 males and 3 females for each language). Dots higher and to the right in each graph indicate frames of greater intensity. Those located toward the top left indicate frames that have lower harmonicity

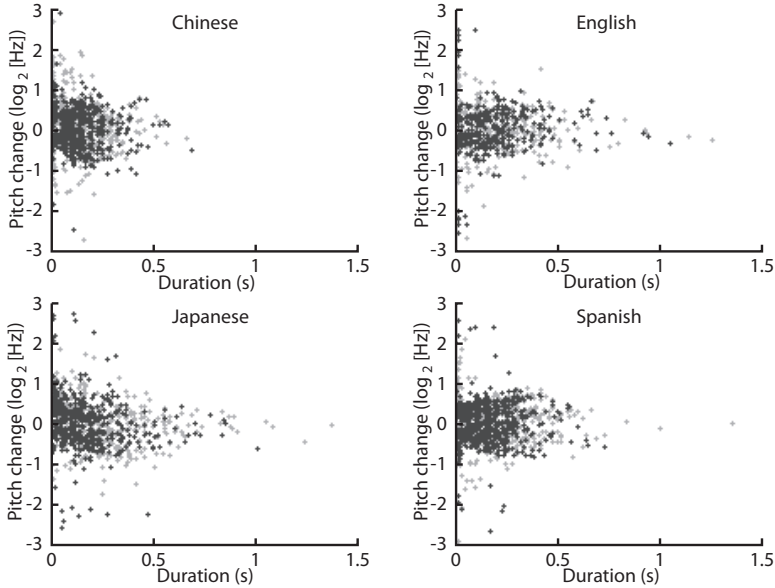


Figure 4. Distribution of stylized pitch line segments (altered from Komatsu & Arai 2003). Darker dots are from male speakers, lighter ones from female speakers.

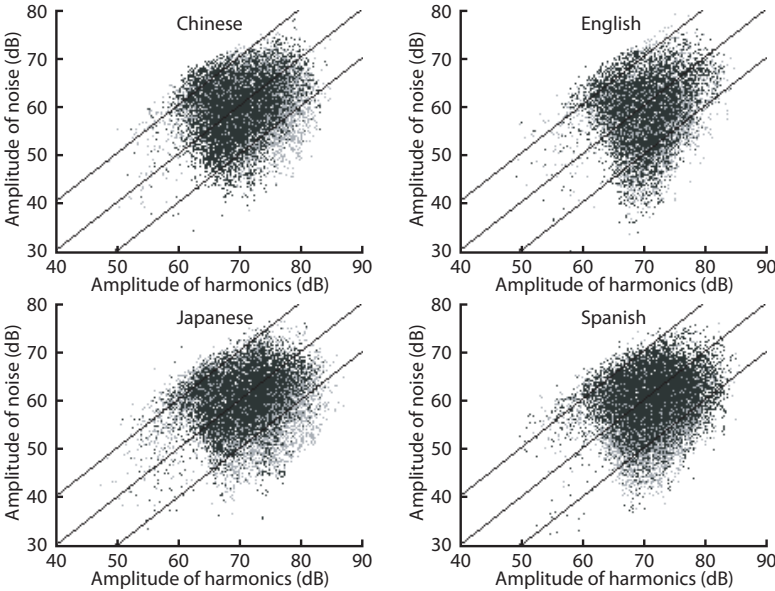


Figure 5. Instantaneous intensity of harmonics-noise (altered from Komatsu & Arai 2003). Three auxiliary straight lines in each graph indicate harmonicities of 0, 10 and 20 dB, respectively. Darker dots are from male speakers, lighter ones from female speakers.

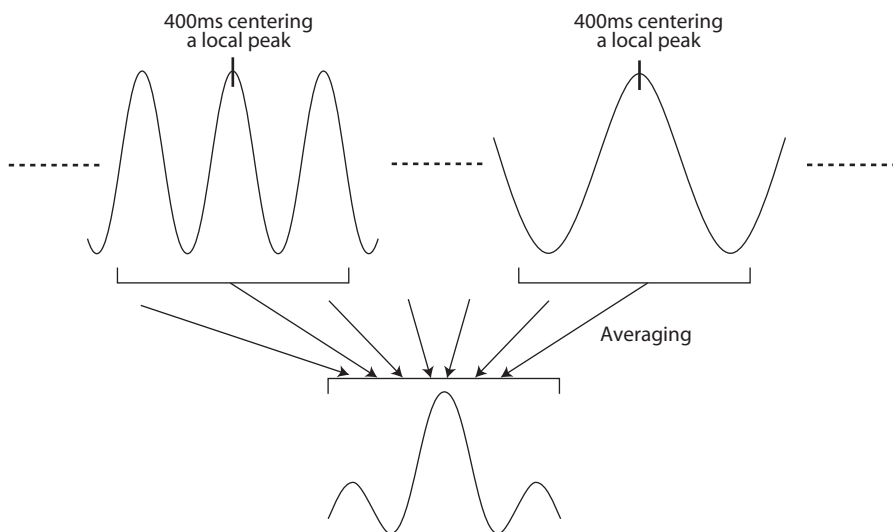


Figure 6. Averaged syllables.

(more consonantal), and those toward the bottom right indicate higher harmonicity (more vocalic).

Although further research is necessary to clarify how these plotted frames correspond to consonant and vowel segments, it is clear that languages with different prosodic types have different distributions of frames.

In order to obtain a clearer result, a statistical procedure was applied, focusing on stress-timed rhythm (English) and mora-timed rhythm (Japanese), which are the two extremes in the rhythm type configuration. To capture the different shapes of distributions in the two languages, the interquartile ranges (IQRs) of harmonics amplitude (x -axis) and noise amplitude (y -axis) were calculated. IQR is the range between the 25 and 75 percentiles of the samples, and it is a robust estimate of the spread of the data. Statistical tests using the data from all speakers in the corpus showed that the noise IQR was greater in English than Japanese (Mann-Whitney U test, 2-tailed, Noise $p < .01$, Noise/Harmonics $p < .05$), i.e. English has a wider vertical spread than Japanese.

Figure 6 illustrates how to calculate an averaged syllable. First, from one stretch of speech (i.e. one speech sample), local peaks in either its harmonics-amplitude contour or intensity contour are picked up and the 400 ms intervals around each local peak are cut out. Then, these cut out intervals are averaged; an averaged contour time-aligned at the local peaks (regarded as syllable centers) is obtained.

Figure 7 (overleaf) shows averaged intensity contours, which show the averaged shapes of syllables. Each graph shows averaged contours from three speakers. A universal characteristic of syllables is observed in these contours. See the Chinese graph (top left panel) for illustration. In the x -axis, 200 ms is the center of the averaged syllables. In the region of 100–200 ms, intensity is smaller than in 200–300 ms. This indicates that the syllable onset

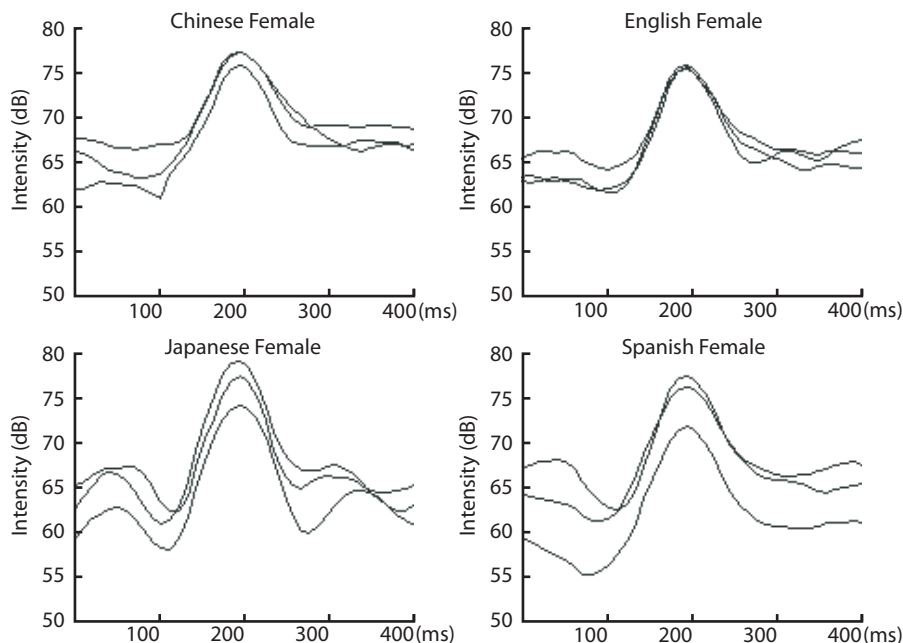


Figure 7. Averaged syllables (Female speakers) (altered from Komatsu & Arai 2003).

tends to have more consonantal elements, and that the syllable coda tends to have more vocalic elements, such as the ending part of diphthongs, nasals, etc. Such a tendency can be observed in other languages, too.

This representation also shows cross-linguistic differences. Clearly there are bumps before and after the center peak in Japanese (around 50 and 350 ms). This indicates that Japanese syllables occur fairly regularly over time.

Again, a statistical procedure was applied to English and Japanese data. In order to capture the temporal regularity, or to capture how clearly the bumps appear, the height of bumps was measured. Comparing the part preceding the syllable center (0–200 ms) with the part following it (200–400 ms) shows that there is a tendency for bumps to appear more clearly in the preceding part. Therefore, it was decided to check the clearness of the bumps in the preceding part. Specifically, the minima in the region of 100–200 ms (depth of the valley) and the maxima before that (this value minus the depth of the valley is the height of the bump) were measured. Statistical tests confirmed that valleys are deeper and bumps are higher in Japanese than in English (Mann-Whitney U test, 2-tailed, Valley $p < .05$, Bump $p < .01$), meaning that Japanese is more regular over time.

To summarize, it was proposed that the relevant acoustic elements are pitch, intensity, and harmonicity. The analyses of characteristics showed the importance of parts (distribution of parts and partial shapes): specifically, stylized line segments of pitch, instantaneous intensity of harmonics-noise, and averaged syllables. Statistical procedures confirmed that

	simulates	is made of	correct response rates
Set 1	Intensity	white noise	61.3 %
Set 2	Intensity	pulse train	61.1 %
Set 3	Intensity, Harmonicity	white noise + pulse train	63.1 %
Set 4	Pitch	pulse train	62.8 %
Set 5	Intensity, Pitch	pulse train	74.4 %
Set 6	Intensity, Harmonicity, Pitch	white noise + pulse train	79.3 %

Table 1. Stimulus sets and correct response rates.

the two extremes of rhythm types, English and Japanese are different in acoustic characteristics. It concludes that the source features differ according to prosodic types.

4. EXPERIMENT 3: PERCEPTUAL EXPERIMENT WITH SOURCE FEATURES PARAMETERIZED. A perceptual discrimination test was conducted to investigate whether humans can discriminate prosodic types solely based on the source features (Komatsu *et al.* 2004). Excerpts from Chinese, English, Spanish, and Japanese, which differ in lexical accent type and rhythm type, were used. The speech samples of English and Spanish were drawn from the MULTEXT prosodic database (Campione 1998). The corpus consists of the recordings of 40 different passages each of English, French, Italian, German, and Spanish; and the same passages are translated into each language. Japanese samples were taken from Japanese MULTEXT β (Kitazawa 2002). The Chinese samples were recorded by the author. For each language, 9 passages (3 passages × 3 speakers) were used as stimuli; the first 5 seconds of each passage were used.

From these excerpts, six sets of signals simulating some or all source features of the original speech were made, as described in **Table 1**. They were made of white noise and/or pulse trains. These sets are grouped into three: those carrying amplitude information (Sets 1–3), the one carrying pitch information (Set 4), and those carrying both (Sets 5–6).

Twenty graduate students and researchers specializing in linguistics, speech therapy, or speech engineering voluntarily participated in the experiment. They were asked to listen to a pair of languages and judge the sequential order of the languages. For example, a participant listened to a Chinese sample and an English sample sequentially and judged whether it was Chinese-English or English-Chinese. A test session consisted of 216 trials and took about an hour. The test session was conducted from Set 1 to Set 6. Each set consisted of 6 subsets: Chinese-English, Japanese-Spanish, Chinese-Japanese, English-Spanish, Chinese-Spanish, and English-Japanese. Each subset consisted of 6 trials.

In general, as the available information increases, the rates of correct responses increase, that is, discrimination gets easier. See **Table 1** for the correct response rates averaged across all languages. The rates for Sets 1–3, those with only amplitude information, are comparatively low, and the rate for Set 4, the one with only pitch information, is also low, but when

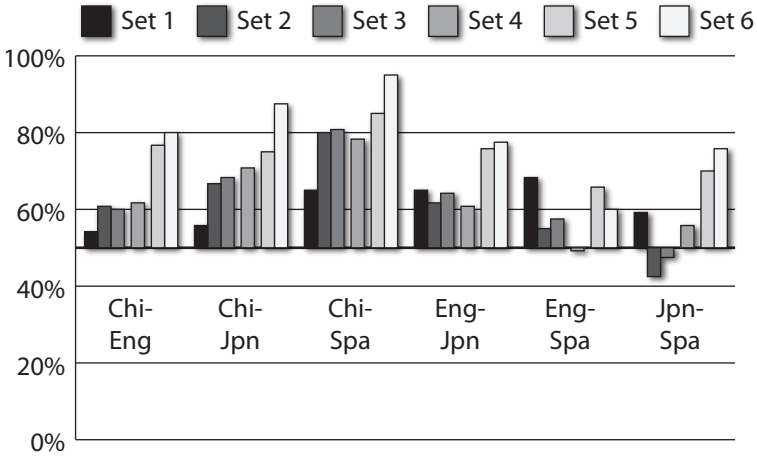


Figure 8. Correct response rates for each language pair.

such information is combined (Sets 5–6), the rates get higher. This result is quite straightforward.

The correct response rates for each language pair show a complicated situation. **Figure 8** shows the correct response rates for each language pair. It seems that rhythm types are important in determining the discrimination difficulty. Consider rhythm type configuration (stress-syllable-mora represented by English-Spanish-Japanese). It is reasonable that the English-Japanese pair is easier to discriminate than the pairs of close rhythm types, English-Spanish and Spanish-Japanese. The tonal/non-tonal contrast of accent type also seems relevant (Chinese is tonal, the others non-tonal). Chinese-Japanese and Chinese-Spanish have good scores. The Chinese-English pair has comparatively good scores but may be adversely affected by the stress rhythm that both languages may have.

To summarize, the perceptual experiment with the source signal of languages differing in prosodic types indicated that humans can discriminate these prosodic types and that the discrimination is easier if more acoustic information is available. Further, the results showed that languages with similar rhythm types are difficult to discriminate (i.e. Chinese-English, English-Spanish, and Spanish-Japanese). As to accent types, a tonal/non-tonal contrast was easy to detect. (The acoustic analysis of the experimental stimuli found that quick pitch fluctuations in Chinese contribute to the perceptual discrimination of tonal/non-tonal accents.)

5. CONCLUSION. Different languages sound different. The difference comes from their segmental or prosodic characteristics, and a considerable part of the difference must derive from the typological difference in prosody. However, the acoustic correlates of prosody are not yet clear. The present paper focuses on prosody, or the source component of the source-filter model.

It illustrates that the source represents prosodic variability in terms of hard-science linguistics. The experiment on the perception of Japanese consonants (Experiment 1) was motivated by the fact that segmental and prosodic features are ideologically distinct in soft-science linguistics, but such notions cannot be completely separated in acoustic domain (hard science). The experiment showed that the source features contain sonority information but not phoneme information. This entails that the source can represent syllable rhythm because the sonority contour specifies syllable structures.³ Thus the source features (hard science) approximately correspond to prosody (soft science). The acoustic analysis of source features (Experiment 2) and the perceptual experiment with source features parameterized (Experiment 3) show the correspondence of the source features to prosodic types more directly. Experiment 2 makes proposals on acoustic elements and characteristics, showing that acoustic characteristics differ among languages of different prosodic types. Experiment 3 endorses the perceptual correspondence of the source features to prosodic types.

The theoretical question addressed by this paper is whether prosodic types can be defined acoustically. The distinction between segmental and prosodic, or suprasegmental, features in soft-science linguistics was correlated to the filter and source in a hard-science acoustic model. The present research, as a hard-science study, focuses on Saussurean significant, vis-à-vis signifié, and pursues quantitative, vis-à-vis qualitative, measurements of prosodic characteristics. It contributes to establishing the descriptive system of prosody.

- ¹ This paper is based on Komatsu (2007), which is the compilation of the author's previously reported works including those in LACUS 28 and 29 (Komatsu 2002, Komatsu & Arai 2003).
- ² The term 'loudness' usually refers to the frequency-weighted intensity in acoustics, but it simply refers to the intensity in this article.
- ³ For phonology and phonetics without the segmental phonemes, see Sullivan (2005) and the articles cited there and Fujimura (2000).

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FLOATING QUANTIFIER PLACEMENT: A PROSODIC ACCOUNT

LISA ROCHMAN
Ben Gurion University

PHONOLOGY AND INFORMATION STRUCTURE¹ play a crucial role in determining where floating quantifiers (FQs) will be placed in the linear string. Through the analysis of spontaneous speech it becomes clear that syntax alone cannot be responsible for determining where floating quantifiers occur. In this paper I will show that the position of FQs within the linear string is determined by prosodic constraints, in particular pitch accent placement and prosodic phrasing. Information structure will also be shown to play an important role in FQ placement through its affect on prosody. No new prosodic constraints will be required in order to account for FQ placement.

1. FLOATING QUANTIFIERS. Floating Quantifiers are determiner quantifiers that can occur non-adjacent to what they quantify. In English, there are three FQs; *all*, *both*, *each*.

- (1) a. The children all/both/each might have greeted the teacher
- b. The children might all/both/each have greeted the teacher
- c. The children might have all/both/each greeted the teacher

Other quantifiers cannot occur in these non-adjacent positions,

- (2) a. *The children some/a few might have greeted the teacher
- b. *The children might some/ a few have greeted the teacher
- c. *The children might have some/ a few greeted the teacher

There are two main approaches to floating quantifiers; the stranding approach (Sportiche 1988, Bošković 2004 and references therein) and the adverb approach (Bobaljik 2001 and references therein). These approaches seek a syntactic explanation for how the quantifier comes to occur in the position that it does. When there are several possible positions that the FQ could occur in, as in (1), the syntactic approaches have little to say.² These approaches rely on judgments and informants and therefore fail to note the clear patterns that occur with FQ placement in natural speech. By taking into account the role of prosody, the phenomena of quantifier floating will be given a more thorough account.

2. FLOATING QUANTIFIER PLACEMENT

2.1. PHONOLOGY AND SYNTAX. Prosody plays a crucial role in the placement of floating quantifiers. This role has been overlooked in the literature because, initially, FQ behavior seems to be regulated by syntax. It is in fact syntax which determines the positions that the

FQ can occur in. Prosodic considerations, however, determine which of these positions the FQ will be realized in. Within the syntactically allowed positions, all positions are not equal. There are favored positions for FQs to occur in. Placement of an FQ in a 'disfavored' position will not render a sentence unacceptable, only 'degraded'. Research on FQs is primarily based on informant and researcher judgments which failed to elucidate the clear patterns of FQ placement. These patterns are consistent across speakers. Additionally, spontaneous data taken from dialogues allow for the context of the sentence to be apparent. In this paper, it will be shown that context is a key factor in FQ placement.

2.2 DETERMINING THE PATTERNS. The pattern of FQ placement will be shown in this section. These patterns are discerned from spontaneous speech and informant ratings.³ While there may be several positions that FQs can occur in, as was shown in (1), informants have very strong intuitions on where the FQ should go. First we will look at informants' ratings and then at the actual occurrences in natural speech.

Informants were asked to rate sentences along the following scale:

- (3) 1 = would never say
 2 = wouldn't say it, but possible
 3 = wouldn't likely say it, but it sounds fine
 4 = perfectly fine, would definitely say it

Ratings were used in order to avoid informants using their own cut-off line between acceptable and unacceptable. Different informants may allow differing levels of deviation from the ideal before they determine a sentence to be 'unacceptable'. Using the rating scale above allows informants to relate to whether or not it is something they would say as well as to relate to how acceptable it sounds to them.

The first pattern we find is that FQs are not favored adjacent to full NPs, as in (4)a.

- (4) a. The children all have greeted the teacher. Rating: 2
 b. The children have all greeted the teacher. Rating: 4

Informants consistently agree that (4)b is as significantly better than (4)a. These ratings are representative of informants' judgments for different sentences of this sort with all three FQs (*all, both, each*). This preference was upheld regardless of the complexity of the subject (as long as it was a full noun phrase as opposed to a pronoun). Spontaneous data clearly show that FQs are not favored adjacent to full NPs. In fact, it shows that FQs floated from full NPs are not favored at all. A search of the Santa Barbara Corpus showed that in 67 occurrences of floating quantifiers, the FQs are floated from full NPs in less than 3% of the instances while they floated from pronouns in 97% of the instances.

In addition to showing that FQs floated from full NPs are not favored, corpora data also show that FQs are consistently favored adjacent to the auxiliary verb.

- (5) '...we would all sit around the rug' (SBC disk 1 file 15: 1151.955–1153.255)

- (6) 'We're all worried about the ozone,' (SBC disk 2 file 17: 870.175–871.670)
 (7) '...they were all snowed in.' (SBC disk 2 file 21: 1010.195–1011.152)
 (8) '...they were all one big happy family' (SBC disk 2 file 21: 383.220–385.595)

Examples (5)–(8) are representative of the type of sentences found in the corpora. This is a second pattern that we encounter; FQs are favored adjacent to auxiliary/modal verbs. There were no occurrences of pronoun+FQ+aux. But as the data in (9)–(11) show, FQs do occur adjacent to pronouns when the auxiliary/modal verb is absent. This shows that while FQs can occur adjacent to pronouns, in the presence of auxiliary/modal verbs FQs prefer to be adjacent to the latter.

- (9) '...we all envy that oneness.' (SBC disk 2 file 23: 1395.675–1398.135)
 (10) '...they all had asthma' (SBC disk 2 file 23: 466.135–467.930)
 (11) '... it's experienced as we all reached out' (SBC disk 2 file 20: 1297.125–1299.520)

This can be contrasted with the case of an FQ adjacent to a full NP for which there were no instances found.⁴ Thus far we can simplify the pattern and say that FQs are favored adjacent to function words and disfavored adjacent to lexical words.

The next case to be explored is where there are several weak words and a full DP or a pronoun. Based on the data analyzed so far, the assumption is that the FQ will be favored following the final weak word. Informants were asked to rate sentences like those in (12) with full NPs and pronouns

- (12) a. The children all might have greeted the teacher. Rating: 2
 b. The children might all have greeted the teacher Rating: 2 (some informants 3)
 c. The children might have all greeted the teacher. Rating: 4

Informants consistently favor the FQ in the expected position, following the final function word. It is important to note that informants make it very clear that all the positions are possible. Sentences with FQs in those positions are acceptable, but they are simply degraded. The examples in (12) illustrate the findings from informants. FQs are: disfavored adjacent to full NPs, disfavored (although less so) in between two function words, favored at the end of a string of function words or, if there is only one function word favored, adjacent to it. When pronouns are used instead of full NPs the ratings remain the same, except for (12) a which is rated as a three. Do data from the spontaneous speech coincide with these judgments? Unfortunately the corpora used in this research turned up no occurrences of this construction. It should be noted that floating quantifiers are not a particularly common occurrence unto themselves. In this part of the research two corpora were analyzed, and future work should be expanded to include more corpora and therefore pose the likelihood of encountering this type of data. But there is further evidence that informants' preference for where to put the FQ is quite intuitive and comes from initial stages of data collection.

Initial data collection clearly indicated that informants' placement of the FQ was intuitive. At one stage of data collection, informants read sentences similar to (12)a–c and were

recorded reciting the sentences. Interestingly, informants had no problem with sentences like (12)c, but when they recited (12)a and (12)b there were problems. The informants switched the word order and placed the FQ after the final auxiliary. In other words, they produced sentences like (12)c for most of the sentences. While in a few cases, informants did not produce the switch, by and large they did. Perhaps most interesting was the fact that this switch was not perceived by the informant who was uttering the sentence nor by the researcher who was present during the recording.

Spontaneous data, informants and inadvertent production clearly show that there is a preferred word order that is present across speakers of American English. This preference is not captured by any syntactic treatment of the phenomenon, because the other word orders do not result in a violation—simply a disfavoring. McCloskey (2000) found that in West Ulster English, when the FQ placement violated the syntactic constraints but obeyed the prosodic constraints, the sentences were ruled out. When the FQ placement violated the prosodic constraints but obeyed the syntactic ones, the sentence was acceptable but degraded. This indicates that what is determining the FQs position are prosodic constraints and not syntactic ones. The reason for the disfavoring will be explained in the following section.

3. THE PHONOLOGY OF FQ PLACEMENT. In the previous section it was shown that FQs are favored adjacent to function words. This description requires an explanation—an answer to the question of why. Violation of this preference results in a degraded but acceptable sentence. Sentences of this degraded type seldom occur in natural speech, but informants judge the sentences to be possible. This does not suggest the influence of syntactic constraints; but instead it brings prosodic constraints to mind.

The different patterns for FQ placement all center on the FQ occurring adjacent to a function word. In the usual case, a function word will not be pitch accented (German *et al.* 2006) and generally not even stressed; and in many cases they may be reduced, i.e. *have* becomes *'ve*. Function words are prosodically weak. They do not project their own phonological word and incorporate into a stronger host word (Selkirk 1996).⁵ But what about the FQs themselves? Are floating quantifiers prosodically weak or strong? Sportiche (1988) argues that FQs are the same as their determiner quantifier counterparts. While determiners are function words and weak, strong determiners have been argued to regularly receive a stress accent (Geurts & van der Sandt 1999). *All/both/each* are all strong determiners and are regularly pitch accented. The favored order is with the FQ adjacent to the weak word(s). So what is happening here is that the FQ provides a host for the weak words. The weak words are prosodically incorporated into prosodic units with the floating quantifier. As to why the FQ would occur at the end of the prosodic string we can now see: The FQ acts as a host to support the weak word.

The prosodic strength of the function word and the FQ cannot explain the full pattern of FQ behavior; prosodic phrasing above the word level as well as information structure needs to be taken into account. Following Pierrehumbert (1980) there are two levels above the prosodic word; intermediate phrase (ip) and the intonational phrase (IP). The intermediate phrase is made up of at least one pitch accent, the nuclear accent which is also

the final accent in the phrase, although the phrase may also have prenuclear accents. The intonational phrase is composed minimally of one intermediate phrase. A discussion of how the syntactic sentence maps to phonological phrases is beyond the scope of this paper (but for a few different treatments see: Truckenbrodt 1995, Nespor and Vogel 1986, Selkirk 1984 among others). There are some basic aspects that are generally agreed to be crucial for phrasing. These include the syntactic structure, phonological length and information structure (Selkirk 2000). In this paper we will see that phonological length and information structure are crucial to our understanding of FQ placement

Two information structure terms need to be introduced before the effects of phrasing can be discussed further:

- (13) a. Topic⁶
 - what the sentence is about
 - the pivot for assessment
- b. Focus
 - what the speaker intends to direct the hearer to
 - the answer to a wh-question (Erteschik-Shir 1997)

In the most basic case new information is focal while given information is topical. Following Erteschik-Shir's theory of F(ocus)-Structure a constituent that is pitch accented is marked [+focus]. The f-structure theory allows for subordinate focus structures – meaning foci can be embedded within topics.

The f-structure of a given sentence affects the prosody of the sentence; this in turn affects the placement of the FQ. Looking first at full NPs, we recall that the FQ is disfavored following the full NP, this point is supported by informant judgments and corpora searches. As noted earlier, a full NP is heavier than a pronoun, but what role exactly does this weight play? The first thing to note is that the full NP subject is usually pitch accented and followed by a prosodic boundary. Frequently a phrase break occurs after the subject when the subject is a full NP. But if a pronoun is used instead of a full NP, then the phrase break is either not present or it occurs after the lexical verb (Gee & Grosjean 1983, Soderstrom *et al.* 2003).

- (14) (Ben) (hit the car).
- (15) (He hit) (the car).

And as mentioned earlier, the FQ is also usually pitch accented. That means that if we were to have the full NP followed by the FQ, we would have two pitch accented words occurring adjacently. This is not favored in English, which prefers weak elements separating strong ones. A question that arises now is: Why would the full NP subject consistently be pitch accented? In the neutral f-structure, the topic is the subject and the focus is the object (Erteschik-Shir 1997). This implies that the FQ which is modifying the subject should also be topical. Note though, that the use of a full NP in natural speech tends to occur when the speaker is introducing a new topic or reintroducing something into the discourse.

- (16) a. ...and all these guys off the right and left,
 b. ...and they're all calling... (SBC disk 2 file 225:543.760–548.092)

When the new information is being introduced in (16)a the full NP is used, but when the same, now old/given information is used in (16)b the pronoun is used. This is consistent with language use. So if, in natural speech, a full NP is used, it is likely that the word will be pitch accented because the subject is focal. The FQ is not favored adjacent to the NP because there will be a clash. The sentence will also have prosodic phrasing problems. Usually there is a break after the subject. If the FQ is present, the break can either occur after the NP (which is degraded due to the clash) or before the FQ. This would result in the phrasings (17):

- (17) ((The CHILDren)_{ip} (ALL have seen the movie)_{ip})_{ip}

There is a further problem though. We frequently find a phrase break after the pitch accented floating quantifier. We would thus be left with (18):

- (18) ((The CHILDren)_{ip} (ALL)_{ip} (have seen the MOVIE)_{ip})_{ip}

This pattern is disfavored for several reasons. First, it is a short sentence and there are three intermediate phrases, the fewer phrases the better. Secondly, to have an ip composed of a singular monosyllabic hybrid function/lexical word is disfavored unless there is strong contrastive stress on it. The size of the three phonological phrases varies greatly. It has been shown that prosodic boundaries usually occur at 'roughly equal distances in the speech stream' (Wijnen 2004:2, see also Stavropoulou 2002). The monosyllabic phrase causes the phrases to vary in size which leads to a disfavored phrasing. Finally, this pattern requires *the movie* to be pitch accented because every ip must have at least one pitch accent. Depending upon the f-structure of the sentence this pitch accent may or may not be problematic. The word order NP+FQ is disfavored because it results in disfavored prosodic structures. Crucially though, this word order is possible. It is this fact that initially indicates that the constraint on the FQ placement is prosodic/phonological and not syntactic.

Turning now to the case of pronouns and FQs we again see the role of pitch accenting and prosodic phrasing. When the FQ floats from the topic, it is pitch accented. This gives a subordinate f-structure: [*they* [*all*]_{foc}]_{top}. A phrase break frequently occurs after the FQ.⁷ To see the role that phrasing plays, it is useful to look at cases with more than one weak word and a floating quantifier. This was seen in examples (5–8) as well as (12). Looking first at example (6) repeated here as (19), we see that the FQ comes after the auxiliary and the pronoun; in other words, the FQ occurs after the final weak function word.

- (19) 'We're all worried about the ozone,' (SBC disk 2 file 17: 870.175–871.670)

It is possible for an FQ to occur between two function words (20):

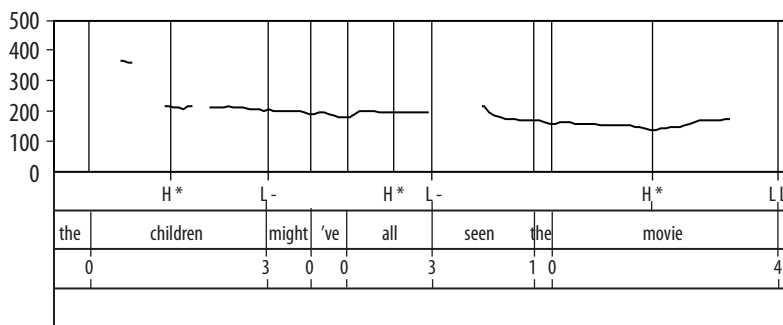


Figure 1. FQ occurring after the function words.

(20) We all are worried about the ozone.

Informants judged (20) to be an acceptable sentence. Some informants rated it a 3, while all informants gave (19) a 4. Two corpora searches turned up very few instances of the word order found in (20). By using a combination of corpora and informant judgments, we can determine that although pronoun+FQ+aux is possible, it rarely occurs in spontaneous speech. If it were to do so, it would lead to a few possible prosodic patterns. The first possible pattern would yield [pronoun FQ aux]_{ip}; the whole unit would form a prosodic phrase with the FQ being pitch accented. But there are two problems here: The first problem relates to the location of prosodic prominence. As is well known, prosodic prominence prefers to occur at edges. The most prominent syllables will occur in edge constituents, and within a word—syllables heading feet at the edges of words will be more prominent than syllables in feet that are not at an edge (see Selkirk 1995 among others for a discussion of prosodic prominence and edges). The strongest part of the prosodic unit is favored at an edge. This is not to say that in English, stress cannot occur in other positions, because it can and does, but it states a preference. In light of the fact that FQs are strongly favored at the edge of the prosodic domain, it can be surmised that this is because of the preference to place the prosodically strongest element at the edge of the given domain.

The second problem with (20) relates to the frequent occurrence of prosodic boundaries after the FQ. If we were to get a boundary after an FQ that occurs between two function words,⁸ the weak word would be stranded. This shows that this prosodic unit cannot felicitously be formed. This was checked on elicited speech since it is the disfavored order and does not occur in natural speech. Speakers put a prosodic boundary after the full NP subject, and had a strong boundary before the FQ. The function word *might* is subsequently stranded. The resulting sentence was phrased quite unnaturally; compare Figure 1 and Figure 2 (overleaf). This word order results in a stranded function word, therefore this word order is disfavored.

The second possibility for phrasing is to have the pronoun and FQ form one prosodic phrase, and the auxiliary and the verb to form a second unit yielding (21)a or b.

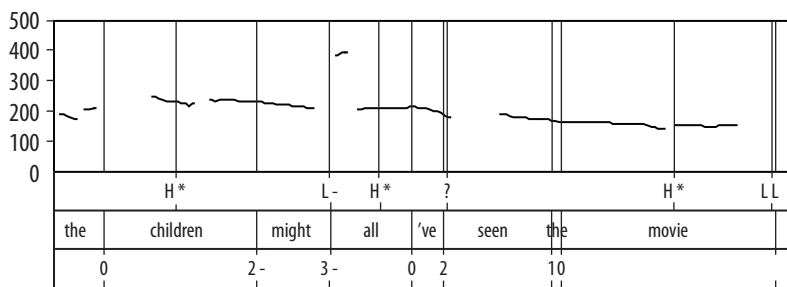


Figure 2. FQ occurring between two function words.

- (21) a. ((We all)_{ip} (are worried)_{ip} (about the ozone)_{ip})_{ip}
 b. ((We all)_{ip} (are worried about the ozone)_{ip})_{ip}

While theoretically both (21)a and b are possible, both have critical problems that render them disfavored word orders. In (21)a, in order for the second *ip* to have a pitch accented element, which it must have because all intermediates phrases must have at least one pitch accent, either the auxiliary or the lexical verb must be pitch accented. Neither of these is an optimal choice. The auxiliary verb usually occurs in a weak form, and lexical verbs are seldom pitch accented—unless they are the focus. Moreover, it is well known and easily observed that the auxiliary verb phrases with pronominal subject and not with the verb phrase (VP).

- (22) a. They've written the speech.
 b. *They've written the speech.

The crucial point here is that if speakers were to use this word order they would have to contend with a disfavored prosodic structure. Individual speakers may choose different strategies to produce the least disfavored option. But from natural speech, we see that informants avoid this situation by not using the problematic word orders. It is through informants' ratings that we know that the structure is possible but degraded.

5. CONCLUSION. This paper has shown that within a 'syntactic' phenomenon we find prosodic constraints at work. FQ placement can only be given a concise explanation when syntactic explanations are used in conjunction with prosodic explanations. Pitch accenting and prosodic phrasing are key factors in FQ placement. Information Structure, through its influence on prosody, is also a major player in FQ placement. Data are required from both natural speech and informants. Natural speech shows which patterns speakers use, while informants help us understand why these patterns are favored. By incorporating all these factors into the analysis of the phenomena, a comprehensive explanation can be given.

¹ I would like to thank Nomi Erteschik-Shir for all her help and encouragement in this research. Needless to say all errors are mine alone.

- ² The exception to this would be McCloskey' (2000). His work, which analyzes q-float for wh-quantifiers in West Ulster English, takes prosody into account.
- ³ Spontaneous speech comes from two corpora, The Santa Barbara Corpus (Du Bois *et al.* 2000) and the Buckeye Corpus (Pitt *et al.* 2006)
- ⁴ There in fact a few instances of full DP+ FQ. These instances are not being counted here because the FQ occurring in that position served to disambiguate an otherwise ambiguous sentence.
- ⁵ See Nepor and Vogel (1986) for a slightly different approach to the prosodic domain formation.
- ⁶ For an in-depth discussion and treatment of these terms see Erteschik- Shir (1997).
- ⁷ This phrase break also serves to divide the sentence into topic and focus as the boundary marks the division between the topic and the focus.
- ⁸ Prosodic transcriptions are done in accordance with the ToBI guidelines (Beckman and Ayers 1994).

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II



VARIABILITY



AN EXEMPLAR-BASED APPROACH TO VARIABLE INPUT PROCESSING

AMANDA BOOMERSHINE
University of North Carolina Wilmington

THIS PAPER INVESTIGATES the effects of native dialect on the perception of variable input in Spanish. Recent studies from speech perception research suggest that listeners store input as exemplars containing detailed information about the talker and the acoustic signal. For instance, it has been shown that listeners use stereotypes about speakers in perceiving speech (cf. Strand 1999, 2000). Listeners also have been found to have more difficulty with input produced by multiple talkers than with input produced by a single talker. This difficulty included slower naming times as well as more errors (cf. Mullenix & Pisoni 1990, Mullenix *et al.* 1989). Researchers have also found that listeners' experience with sounds and sound patterns affects their perception. For instance, native English speakers of Spanish have been found to use their native phonologies when discriminating between sounds that occur in both languages (cf. Boomershine *et al.* in press).

There is also evidence from recent studies in dialectology and language classification that suggests that listeners store information about the talker, including extralinguistic factors such as socioeconomic status, gender, ethnicity, education level, and origin. Listeners use the information that they collect from their stored exemplars to make judgments about talkers, including where they are from and how much education they have (cf. Boomershine n.d.). Listeners also use their experiences to determine the origin of talkers (cf. Clopper 2004). Listeners are able to make these judgments and associations about talkers that they have never seen or heard before by comparing the input with that which they have heard previously and stored in their lexicon. This input is stored as exemplars, where each exemplar is connected to linguistic and extralinguistic information, including talkers, social relationships, and socioeconomic factors such as education and race. Most of the research on speech perception has been conducted on American English, and typically does not include variation in the stimuli. However, this study examines Spanish and purposefully uses stimuli that show phonological dialect variation to test the perceptual processing of variable input.

The current studies also differ in that the researcher purposefully used stimuli that contained variation in order to test the perceptual processing of variable input. A final difference between the current studies and those conducted by most researchers is that this study can be considered to fall within the area of sociophonetic speech perception research. The results are considered from a variationist point of view, where listeners from two dialects of Latin American Spanish are compared.

The primary questions to be answered in this paper are the following: Does one's native dialect (and its phonology) affect how one hears and process sounds? Are some features of variation more salient or perceptible than others? Can native speakers hear differences in

Variable	Word	Gloss	Mexico	Puerto Rico
/s/	astro	‘astro’	[astro]	[astro], [ahtro], [atro]
/n/	canción	‘song’	[kansjon]	[kansjon], [kansjon]
/ɾ/	porque	‘because’	[porke]	[polke], [porke]
filler	oso	‘bear’	[oso]	[oso]
nonword	cuande	—	[kwaɲde]	[kwaɲde]

Table 1. *Variation in Mexican and Puerto Rican Spanish.*

pronunciation across dialects? How can we best account for the perception and processing of this variation? To answer these questions, three psycholinguistic studies were conducted on native speakers of Spanish from Puerto Rico and Mexico. These studies will be described in the following section, followed by a description of the findings, and finally a discussion of how the results can best be accounted for.

1. DATA. As mentioned above, three studies were conducted on thirty-three native speakers of Spanish—twenty from Central Mexico (Morelos, Mexico) and thirteen from Puerto Rico (Río Piedras). These dialects were selected because of the amount of phonological variation that they exhibit. In Puerto Rican Spanish, syllable final /s/ can be deleted, aspirated to [h], or realized as [s]. In Central Mexican Spanish, however, syllable final /s/ is not deleted or aspirated. In Puerto Rican Spanish, phrase final /n/ is often realized as a velar nasal [ŋ], while in Central Mexican Spanish, it is normally realized as an alveolar nasal [n]. Finally, syllable final /ɾ/ can be realized as a lateral [l] or as a rhotic [ɾ] in Puerto Rican Spanish, but only as a rhotic [ɾ] in Central Mexican Spanish. **Table 1** illustrates the variation in these dialects.

The stimuli for the three studies were recorded by five female speakers of Puerto Rican Spanish and five female speakers of Mexican Spanish. The stimulus set consisted of test words containing syllable final /s/, phrase final /n/, and syllable final /ɾ/, filler words, and nonwords. The filler words are bisyllabic words that do not exhibit variation in the two dialects in question. The nonwords are bisyllabic tokens that do not exhibit variation and that were created from real words by changing the last vowel, the first vowel, or the onset of the first or second syllable. All stimuli were equalized for amplitude using Praat phonetics software (<http://www.praat.org>).

All of the participants took part in a naming task, a lexical decision task, and an identification task. These experiments were run in the home countries of the participants on a Dell Inspiron 1000 laptop using E-Prime software (<http://www.pstnet.com/products/eprime/>) and a 5-button serial response box. The first task, a naming task, investigates whether a speaker’s native dialect affects their naming or repetition time of words from both their dialect and another dialect. For instance, given a native Spanish speaker from Mexico and input in the form of a word spoken by a speaker of Puerto Rican Spanish and a speaker of Mexican Spanish, will the listener be able to repeat the word from their own dialect faster than that of the other dialect? In this task, two independent variables were manipulated.

The first variable is the dialect of the speaker who is producing the stimulus token. The second variable is the phonological variant found in the test words in the stimulus set. This variable is directly related to the first variable in that the realization of these variants is correlated with the native dialect of the speaker.

The lexical decision task investigates whether a speaker's native dialect affects their ability to determine whether a word produced by a speaker from their dialect and another dialect is a word or a nonword in Spanish. For instance, given a native Spanish speaker from Mexico and input in the form of a word spoken by a speaker of Puerto Rican Spanish and a speaker of Mexican Spanish, will the listener be able to determine more quickly whether the word they heard is a real word or not when it is produced by someone in their own dialect, or someone from another dialect?

The final task that was conducted was an identification task, in which the participants were asked to determine whether the word they heard was produced by a speaker of their dialect or of another dialect. The task was designed to determine if the participants in the study could perceive dialectal differences among the talkers in the experiment. This task was also used to determine the prominent phonological variables that distinguish Mexican from Puerto Rican Spanish.

2. FINDINGS. The findings from the three experiments will be presented separately in this section. Using SPSS software, a repeated-measures analysis of variance (ANOVA) was conducted on the reaction time data from the naming task, with the two factors being phonological variable (phrase final /n/, syllable final /c/, and syllable final /s/) and speaker dialect (Mexican or Puerto Rican). There was a significant main effect of phonological variable [$F(2, 58) = 37.387$; $p < .05$]. The stimuli containing a syllable final /c/ resulted in the shortest reaction times, while the stimuli containing syllable final /s/ resulted in the longest reaction times. The results from the naming task show that overall, listeners were slower to respond to stimuli containing syllable final /s/ than to stimuli containing word-final /n/ and syllable final /c/. This is shown in **Figure 1** (overleaf).

In order to determine whether there was an effect for phonological variable on the reaction time of the listeners in the lexical decision task, a repeated measures analysis of variance was conducted using SPSS software (version 12.0). A significant main effect for phonological variable [$F(2, 2) = 36.64$; $p < 0.05$] was found. The stimulus items containing syllable final /s/ resulted in slower reaction times compared to those items containing phrase final /n/ and syllable final /c/. Overall, those items containing syllable final /c/ resulted in the fastest reaction times. **Figure 2** (overleaf) illustrates these findings.

To determine if there was a significant difference in the accuracy for the lexical decision task based on the dialect of the speaker of the stimuli, a repeated-measures analysis of variance was conducted on the accuracy data, with the factor of speaker dialect (Mexican or Puerto Rican). There was a significant main effect of speaker dialect [$F(1, 3) = 14.813$; $p < 0.05$]. Regardless of the dialect of the listener, the participants were most accurate overall at responding to input produced by Puerto Rican speakers. Participants were prone to identify the stimulus item as a word incorrectly if it was produced by a Mexican speaker

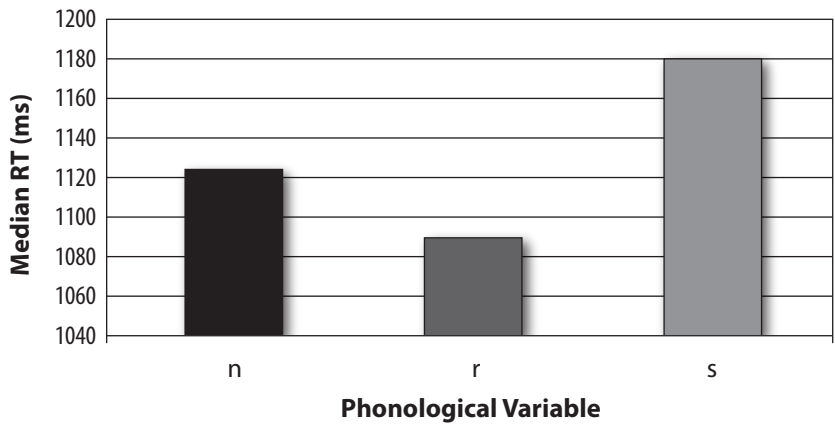


Figure 1. Main effect for phonological variable in naming task. Median reaction time in milliseconds by phonological variable.

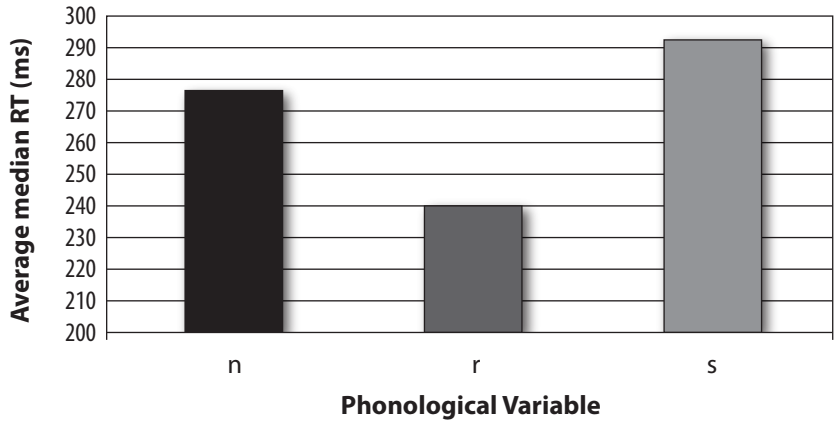


Figure 2. Main effect for phonological variable in lexical decision task. Average median reaction time in milliseconds by phonological variable.

significantly more often than if the item was produced by a Puerto Rican speaker. These findings are shown in **Figure 3**.

To determine whether the presence of a specific phonological variant in the identification task stimuli significantly affected the participants’ ability to determine the dialect of the speaker, a repeated-measures analysis of variance was conducted on the accuracy data, with the two factors being phonological variable (word-final /n/, syllable final /ɾ/, and syllable final /s/) and speaker dialect (Mexican or Puerto Rican). There was a significant main effect of phonological variable [$F(2, 28) = 3.528; p = 0.0$]. Regardless of speaker and listener dialect, the participants were most accurate at identifying a speaker’s dialect when the

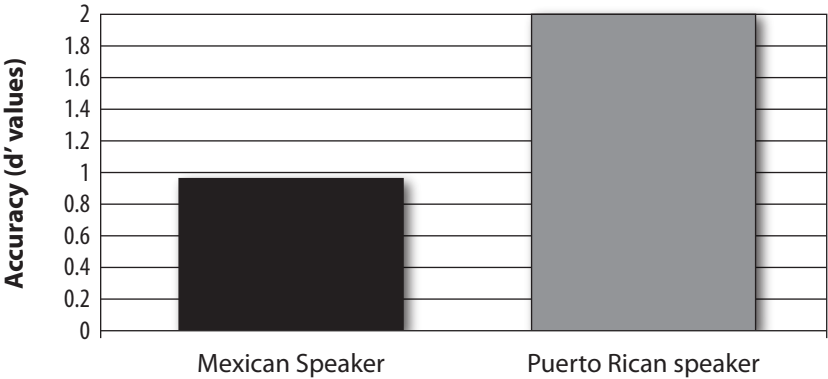


Figure 3. Overall accuracy by speaker dialect for words and nonwords in the lexical decision task.

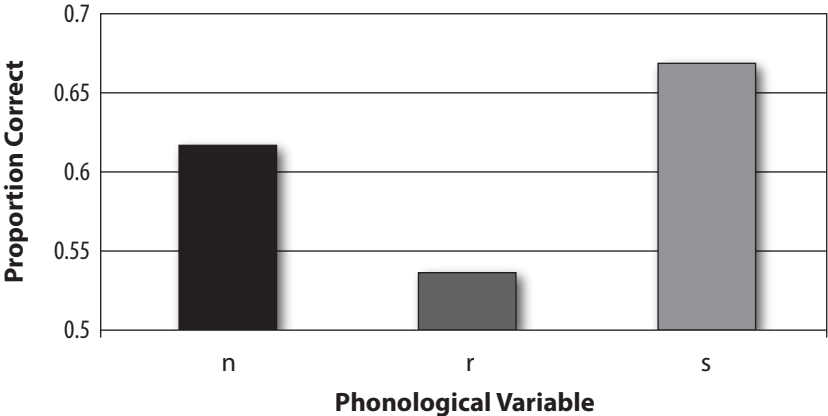


Figure 4. Accuracy data for dialect identification task. Proportion correct by phonological variable contained in the stimuli.

stimuli contained a syllable final /s/. They were least accurate at identifying a speaker’s dialect when the stimuli contained a syllable final /r/. These findings are shown in **Figure 4**.

To determine if the native dialect of the participants had an effect on the response accuracy in the dialect identification task, a repeated-measures analysis of variance was conducted on the accuracy data. We found an overall significant interaction between listener dialect and phonological variable [$F(2, 28) = 15.426; p = 0.0$]. For input containing the phonological variable phrase final /n/, there was no significant difference for the Mexican and Puerto Rican listeners. However, for input containing syllable final /r/, the Mexican listeners were considerably more accurate than the Puerto Rican listeners. The Puerto Rican listeners identified some of the stimuli produced by Mexicans as being produced by Puerto Ricans, and vice-versa. The same is true to a lesser extent for stimuli containing syllable-final

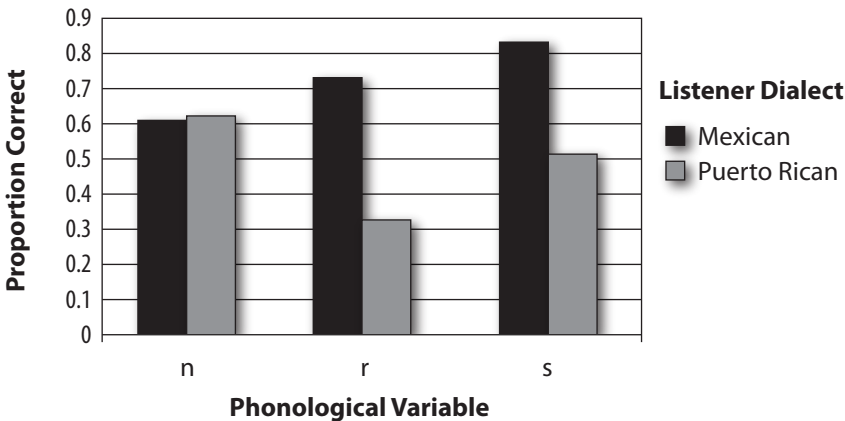


Figure 5. Accuracy by phonological variable and participant dialect for dialect identification task.

/s/. The Mexican listeners were over 80% accurate at identifying their own dialect when the stimuli contained syllable final /s/, while the Puerto Ricans were only about 50% accurate. These findings are shown in **Figure 5**.

Overall, the Mexican listeners were more accurate at identifying the dialect of the speaker than were the Puerto Rican listeners. It is reasonable to suppose that this interesting finding is due to the amount of variability in each of the dialects and also the amount of contact with each other’s dialect, and will be discussed in the following section.

3. DISCUSSION OF FINDINGS. A plausible explanation of the findings from these three studies involves the amount of variation found in Mexican and Puerto Rican Spanish. Central Mexican Spanish, which does not have a lot of variation in the production of the three variables being studied here, differs greatly from Puerto Rican Spanish, which exhibits variation in all of the variables studied in this research project. The remainder of the paper will focus on this difference in variation, and how it affects the processing of variable input by Mexican and Puerto Rican Spanish speakers.

The participants’ performance on the speeded naming task suggests that a listener’s native dialect and their amount of exposure to other dialects have an effect on their ability to perceive variable input, and that the phonological variables that are characteristic of dialects affect listeners at different rates. The listeners’ performance on the lexical decision task also suggests that not all phonological variables should be considered as equal factors in the perception of variable input, as the listeners responded most slowly to stimulus items containing coda /s/ and most quickly to those items containing coda /ɾ/ for both the naming and lexical decision tasks. This finding suggests that there was a delay in the processing of items containing coda /s/ for Mexican listeners because they are not accustomed to variation in the production of coda /s/. The Puerto Rican listeners most likely had delayed processing for items containing coda /s/ precisely because of the amount of

variation available in the pronunciation of coda /s/ in Puerto Rican Spanish. Processing input that is variable, such as items containing coda /s/, will delay processing because of the greater range of choice.

The results from the lexical decision task also suggest that both Mexican and Puerto Rican Spanish listeners were more likely to identify a sequence as a word when the input was Mexican, but that overall they were most accurate at responding to Puerto Rican input. The bias to respond 'word' to both words and nonwords produced by Mexican speakers suggests that for both groups of listeners word-like sequences are more likely to be considered Mexican Spanish, perhaps due to the variation in the input or stereotypes that speakers have toward 'consonant-weakening' dialects. Other studies have shown that listeners' stereotypes affect their processing of input (cf. Strand 1999, 2000). The listeners' performance on the identification task showed marked differences for the two groups of listeners. The Mexican listeners were very good at identifying their own dialect (almost 90% accurate), while the Puerto Rican listeners were not quite as good at identifying their own dialect (almost 70% accurate). The results suggest that the Puerto Rican listeners were labeling the Mexican input as being Puerto Rican, which is expected since they are exposed to Mexican and Mexican-like Spanish on a daily basis (e.g. television, radio, formal addresses) and because Mexican-like Spanish is spoken in Puerto Rico by Puerto Ricans, though not typically in colloquial speech. Mexican-like Spanish refers to Spanish that is consonant preserving. In other words, Puerto Ricans are accustomed to variable pronunciation of syllable-final /s/, where the sibilant is retained in formal situations. They are also accustomed to syllable-final /ɾ/ that is not lateralized, as this variant is also used in certain styles of Puerto Rican Spanish. Orthography, which very closely reflects the Mexican pronunciation of the phonological variables discussed here, is also a possible reinforcement for both the Mexican and Puerto Rican participants. This experience with variable input will be discussed further in the upcoming section on exemplar-based models of speech perception.

The results from the identification task mirror those found for the other two tasks in that the pattern of phonological variables is identical in all three tasks. In this task, the dialect of the speakers producing words containing coda /s/ was most accurately identified, while those words containing coda /ɾ/ resulted in the lowest accuracy scores for the identification of the speaker's dialect. This is also expected because lateralization of coda /ɾ/ is a variable phenomenon in Puerto Rican Spanish, so Puerto Rican listeners are accustomed to hearing both realizations of coda /ɾ/ (i.e. [ɾ] and [l]). In all dialects of Spanish, both laterals and rhotics are found syllable-finally, so the lateralized pronunciation of syllable-final /ɾ/ is not a new sound or sound pattern for the Mexican Spanish speakers. Also, it follows that words containing coda /s/ would have the highest accuracy level, as the variable realizations of coda /s/ in Puerto Rico are not found in this dialect of Mexican Spanish. In other words, speakers of this dialect of Mexican Spanish are not accustomed to hearing speech containing aspirated or deleted /s/, whereas the speakers of this dialect of Puerto Rican Spanish are accustomed to variation in the realization of /s/.

4. TOWARD AN EXEMPLAR-BASED MODEL OF SPEECH PERCEPTION. An exemplar-based model of speech perception allows for a case in which detailed acoustic and talker-specific

information is stored in the lexicon and later accessed in production (cf. Johnson 1997). Thus, there is a direct connection between perception and production, as they are linked in the lexicon. For instance, given the input [eh̥ta], for the Spanish word *esta* 'this', the talker and any information previously stored about that talker (i.e. voices and stereotypes) will be activated, as will the word <esta> in the lexicon and the string [eh̥ta] in the phonology. Because [eh̥ta] is a variable pronunciation of the word <esta>, other pronunciations of that word that the listener has stored will also be activated in the listener's phonology when that word is activated, such as [esta] and [eta]. Then, the listener who becomes the speaker and utters the word <esta> will have these three realizations or exemplars to choose from for the target of production. The phonology thus stores generalizations or patterns superimposed on exemplars, which are stored in the lexicon. The choice of phonology will depend on several issues that are both linguistic and extralinguistic, such as whom the speaker is talking to (i.e. the listener) and the rate of speech.

The varying activation levels are a crucial aspect of an exemplar-based model of speech perception, as evidenced by the findings of this study. The results of the identification experiment suggest that listeners find coda /s/ to be a stronger dialect marker than word-final /n/ and coda /ɾ/. Therefore, the activation between *Puerto Rico* and [eh̥t... would be stronger than the activation between both *Puerto Rico* and [pol̥k... and *Puerto Rico* and ...ŋ]. This ranking makes sense because coda [l] is a sound found in all dialects of Spanish (i.e. *pulga* 'flea'), so this sound (voiced alveolar lateral) in that phonological context (i.e. coda) is not as strong a distinguishing marker for dialect as aspiration or deletion of coda /s/ is. The same is true for word-final /n/. Velar nasals occur in all dialects word-finally before other velars due to the process of nasal assimilation. Thus, word-final velar nasals are not as defining a marker for dialect as compared to the realization of coda /s/.

Figure 6 represents the exemplar model graphically. The thickness of the lines illustrates the level of interaction between two items, and thus the degree of activation of a given item; where the thick lines represent high levels of interaction and activation, and the thin lines represent low levels of interaction and activation. Because retention of coda /s/ is considered to be a marker of Mexican Spanish, as well as educated Puerto Rican Spanish, there is a high level of interaction between these stereotypes and [kos̥t... in the phonological grammar. Uneducated speech can be correlated with the realization of coda /s/ as an aspirated segment or a deleted segment, so there is a high level of interaction between those realizations and the stereotype *uneducated*. However, because educated speakers also aspirate and delete coda /s/ in certain social contexts, there is an interaction between these realizations and *educated*. Note that the interaction is not as strong because aspiration and deletion of coda /s/ are not typical markers of educated speech. Finally, aspiration of coda /s/ has a stronger correlation with Puerto Rican Spanish than does retention of coda /s/, so the interaction between aspiration and Puerto Rican Spanish is stronger than that for retention of coda /s/.

Variability for stereotypes are accounted for in that each listener has specific activations and activation weights between the stereotype category and the other categories. Once a word is activated by the input, that word in turn activates other items that are associated with that word. For instance, if Ana, a young female from Puerto Rico, utters the word *arte*

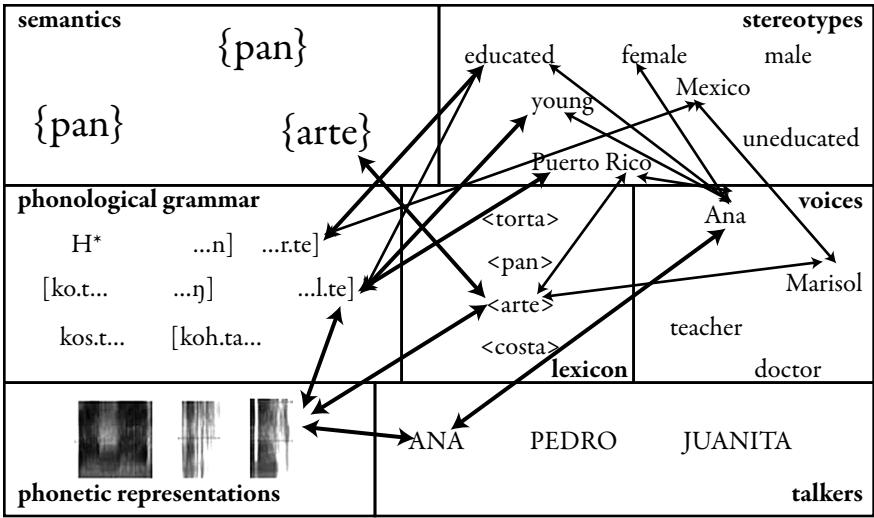


Figure 6. An exemplar-based model of the perceptual processing of arte ‘art’.

‘art’, that word is activated in the lexicon. The lexicon is assumed to be a collection of exemplars, or exemplar-cloud, where all of the items in that cloud are related in some lexical way (for more information on how an exemplar-cloud may be structured, see Pierrehumbert 2001). A string of input is compared to the exemplars stored in the lexicon. If the input is very similar to an item already stored, then it will be stored as part of that exemplar cloud. If it is fairly different, then it will be stored in its own exemplar space in the lexicon. The activation of the lexical item *arte* then activates representations in the phonological grammar, such as *...r.te]* and *...l.te]*. It also activates the semantic notion of {*arte*}. Because the listener has other exemplars of *arte* stored in the lexicon, those voices and stereotypes are also activated. This is illustrated in Figure 6.

5. CONCLUSION. An exemplar-based model of speech perception and processing has been presented in order to account for the findings of three experiments on variable input processing. The current research supports the notion that one’s native phonology does affect how one processes sounds (as evidenced by the results of the lexical decision task). The current studies also found that there are some features of variation that are more salient than others, such as the realization of coda /s/. The retention versus the aspiration or deletion of /s/ was a variable used by the participants in all three experiments, with the same pattern for each of the tasks and participant groups. Finally, the results indicate that native speakers of Spanish are able to hear differences in pronunciation across dialects of Spanish. The findings were presented and can be accounted for using an exemplar-based model of perception. This model not only accounts for the findings presented here, but can also be used to explain and predict variable input processing of other sounds in these dialects and in other dialects.

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DEATH-DEFINING PERSONIFICATIONS: THE GRIM REAPER VS. LA GRANDE FAUCHEUSE

LORIN CARD & FREEDA WILSON
University of British Columbia Okanagan

IN THE *ENCYCLOPEDIA OF DEATH*, under 'Personifications of Death,' Kastenbaum and Kastenbaum (1989:205) note:

[N]o image has provided so rich or historically important a channel for the expression of emotional and intellectual orientations toward life and death as the personification... Representations of death as a person have appeared among many peoples at many times, providing an essential bond between history and biology.

In this paper, we will examine the personification of Death in the French and English cultures, and specifically the evolution of the French personification of Death, which we hold as being so heavily influenced by American culture that it was transformed over time. The long title for this article is 'Death-defining personifications: the relatively stable representation of the Grim Reaper vs. the diachronic and synchronic variations in the representation of the Grande Faucheuse,' and the explanation of this title will become clear in this paper. Through our study, we will demonstrate that *conceptual mapping* (Lakoff & Turner 1989, Kövecses 2002, 2005), which is how concepts are laid out and how their attributes are described in one's mind, is fluid, and often in flux, and that, although *conceptual blending* (Kövecses 2002, 2005), which is how two or more concepts are mixed or blended in one's mind so that they end up sharing attributes that they each had separately to begin with, most often occurs between various concepts within a single culture, it can and does also occur between cultures. Our hypotheses are the following: The French representation of Death as a reaper has evolved over time, while the English representation has remained stable, and the variations in the French representations have been influenced by English language and culture.

1. CONCEPTUAL DOMAINS AND CULTURAL MAPPING/BLENDING. We might expect a concept to be created and evolve similarly in two cultures if the cultures in question demonstrate similarities and if the concept is created from a similar psychological perspective. Ample evidence exists to demonstrate that culture plays an important role in the creation, evolution and maintenance of a concept and that cognitive factors play a major role in the ability of the speakers to conceive and express those concepts. Essentially, the creation of a concept requires facilitation. For a concept to embed itself within a culture, it must be introduced by a source. The likelihood that a concept from the source culture will be accepted in the target culture depends on both opportunity and trial for that concept to

gain effectiveness and be collectively implemented by the target culture. Opportunity can take place in many ways, yet particular methods that have proven to be successful over time are the visual arts and literature, which serve not only as facilitators, but as documented occurrences of the successful implementation of new concepts.

The *Dictionnaire de l'Académie française du XVIIe siècle* (1694) states: 'Poets and Painters represent Time and Death with a scythe.' Indeed, their representation is sustained, nullified or modified over time as evidenced in both English and French cultures. Occurrences of the Grim Reaper and la Grande Faucheuse in the visual arts and in literature, in particular in paintings and poetry, provide evidence that despite cultural similarities or theories of concept formation, two different languages will comprehend and utilize the apparently identical concepts in quite different ways. On the surface, the Grim Reaper and la Grande Faucheuse appear equivalent as personifications of Death, but upon closer examination, are quite different. They are only partially equivalent, as individual instantiations, and notably visual representation and semantic application of the two personifications, are quite different.

Cultural similarities provide a source of environmental and cognitive commonalities which should logically lead to equivalent concept formation. For example, in this case, both English and French cultures once depended on reaping grain to exist, both were basically Christian, and both had experienced mass deaths (i.e. The Black Plague). Experience with death, as well as Christian influences, led to the development of certain attitudes toward death, while the need to reap grain led to the invention of specific tools, such as the scythe. One might, therefore, expect that both the French and English images associated with the concept of the reaper would carry similar attributes with them. Cultural models are 'implicitly and explicitly transmitted through language' and therefore 'linguistic analysis, particularly of words and expressions, reveal underlying assumptions, interests and values' (Bonvillain 2000:74). Indeed, one can note the underlying differences in the perception of death due to separate and evolving cultural experiences in the choice of adjectives describing the personification of Death between the two language groups. For example, as fear and loathing is communicated by the English adjective *grim* versus the significance, respect or admiration embodied in the honorific title in the French *grande* (Vinay & Darbelnet 1977). We believe that the example of the Reaper demonstrates, in part, how underlying and covert differences between two cultures affect linguistic representation in those cultures.

The discrepancy between what we might expect to find, and what actually exists, is evident from a linguistic perspective as well. According to cognitive linguistic theories (Lakoff & Turner 1989, Kövecses 2002, 2005), *conceptual domains* and *cognitive mapping* constitute one explanation of how metaphors and other linguistic phenomena play a role in the conceptualization of the world around us. Another such theory is based on the idea of *conceptual integration* (Kövecses 2002, 2005). Psychologically, the similar formation of a concept, as well as the understanding of that concept, should be theoretically equivalent, as a result of equivalent cognitive input. The personification of Death, a seemingly universal concept, provides a clear example that we cannot expect equivalence of mapping of the same concept across cultures to result in equivalent instantiations in the two cultures. Instead, the evolution and continuing existence of this concept in each culture results in variation as a direct result of cultural imagery, meaning and usage. Conceptual domains

and cognitive mapping demonstrate how metaphors and other linguistic phenomena play a role in our conceptualization of the world around us (Lakoff & Johnson 1980, Lakoff & Turner 1989, Kövecses 2002), but do not account for inevitable differences in various representations of the same phenomenon by two different cultures. Thus, the Grim Reaper and la Grande Faucheuse are similarly mapped and play equivalent roles, but their visual representation has not always been equivalent. Conceptual integration, as outlined by Fauconnier and Turner (2002) and Kövecses (2005), encompasses a more concrete notion of the role culture plays in influencing the creation of concepts and provides a foundation for how a concept may be created, but does not express how the concept is then understood and evoked in different cultures. Even in this case of apparently equivalent metaphors in French and English, there are a number of underlying differences that contribute to making the personification of Death much more culture bound. In addition, *conceptual mapping* should be viewed as structurally dynamic, in order to account for both diachronic and synchronic variations.

As a cognitive linguistic theory, *conceptual domains* define metaphors as the understanding of one conceptual domain in terms of another. A conceptual domain is a group of organized, coherent ideas that allow us to form comprehensible expressions. 'People are plants' forms a conceptual domain, as does 'human life is plant life'. As such, human life is conceptualized in terms of a plant's life and this conceptualization may consist of fundamental notions such as birth, growth and death. The theory of conceptual domains underlies linguistic metaphorical expressions such as 'seeds of life,' 'cut down in the prime of life,' and 'those children are growing like weeds,' explains Kövecses (2000). *Conceptual mapping* outlines the conceptual domain from whence metaphorical expressions are drawn as the source domain, and the conceptual domain understood by the metaphor is referred to as the target domain. In the case of the Grim Reaper, human death is the target domain and plant death is the source domain, and the linguistic expression The Reaper maps plant death onto human death. As well, the source domain of a skeleton representing death is mapped onto the target domain of seeking the dead in the human realm, which seems to stem from the medieval concept of the *Danse macabre*, or the Dance of Death, a common element of the macabre in both French and English, in which skeletons carry the dead off to the kingdom of the dead.

The theory of conceptual integration, or blended theory, which expands on the theory of conceptual mapping by adding conceptual blending, and by incorporating the embodied, thought-based view of metaphor, accommodates complex metaphors by combining basic metaphors.

In conceptual blending, at least two metaphors or concepts, each with its own mental space, exist with an overlap between the mental spaces. This overlap is referred to as a blended space. A blended space consists of the features of each metaphor or concept that are similar or which correspond in some way. The two concepts, death and reaping, have a blended space that consists of reaping-killing-causing death and plant-victim-the one who dies (Kövecses 2005:280). In this blended space, the one who causes death is reaping the one who dies, and this results in the personification of Death as a Reaper. According to this theory, in the speaker's mind, the personification of Death occurs before the mind enters the blended



Figure 1. Composite image of the painting 'La Mort', 1355 A.D., Lavaudieu, France.

space that further includes reaping (Kövecses 2005:281). Therefore, theoretically, the differences between the two images should become clear from the resulting personifications. Regardless, this theory does not account for obvious differences between the Grim Reaper and la Grande Faucheuse (see Websites following References at the end of this paper). For example, Kövecses states that 'the Grim Reaper kills a specific person and does not kill indiscriminately' (2005:281). While this is true for the Grim Reaper, who traditionally does not decide who dies but functions as the messenger or footman, it certainly does not hold true in the case of la Grande Faucheuse who seems to kill indiscriminately, especially as the blindfolded, 17th-century representation of la Faucheuse in **Figure 2** appears to be doing, and part of the Latin inscription on the top left-hand side of the image notes: 'I do not see you.'

In fact, the Reaper seems to possess a number of attributes that differentiate the concept between English and French. For example, the Grim Reaper is male, whereas la Grande Faucheuse is female; the skeleton has historically been an inherent physical feature of the English version but has only very recently become part of la Faucheuse's appearance. In addition, whereas the skeleton naturally has no eyes, but we might still believe it has some type of vision, la Faucheuse is represented as blindfolded in the 17th-century drawing. In order to accommodate these differences, the conceptual network described by Kövecses (2005:280) would need to be expanded. His diagram is used to explain both the French and English personifications of Death, but our study reveals that they are only partially equivalent. Indeed, the variations themselves are too different to be considered simply as one more element to input into the mapping. To complicate the matter, an examination



Figure 2. 17th-century depiction of la Faucheuse (the Reaper) by an unknown artist.

of la Grande Faucheuse over time provides evidence that English culture has influenced French culture, at least inasmuch as the visual representation is concerned. Concept blending is a fairly slippery theory, as Lady Justice is also often depicted wearing a blindfold, just as the 17th-century Faucheuse is depicted wearing a blindfold, which causes one to wonder whether the representation of la Faucheuse involved a blended concept that incarnates attributes from Lady Justice?

2. EVIDENCE OF DIFFERENCES. Evidence that this concept did not evolve over time in a similar fashion in the two languages, as one might expect, appears upon examination of the concept through history in the visual arts and literature. The changes in this concept are especially evident with la Grande Faucheuse from the Middle Ages to the present day, whereas the concept of the Grim Reaper has remained fairly stable over time. In particular, the visual arts depict the clear transformation from the original French image of Death to a close resemblance of the currently accepted English version. A painting inspired by the Black Plague (**Figure 1**), and found in Lavaudieu, France, entitled 'Mors' ('Death'), and dated 1355 A.D., clearly represents an arrow-holding, living woman as the figure of death. From this image, we can see that, prior to the French culture's exposure to reaping, Death was represented as a woman, fully clothed, blindfolded, with a bow and arrows, killing those around her with those arrows. Then, in the 17th-century, there appeared a pencil sketch by an unknown artist (**Figure 2**), which depicts a person in a field, blindfolded, naked and carrying a bow and arrows, which weapons are perhaps reminiscent of Diana, goddess of the hunt, while reaping with a scythe. The human figure, apparently female, in this representation has long hair and a very thin waist, yet appears somewhat



Figure 3. Modern depiction of *La Faucheuse*.

muscular. A possible interpretation of this image is that there is a slight transformation occurring toward the English concept of the Reaper, manifested, for example, in the shift from arrows to scythe, and from fully clothed to skeletal. Today, a figure currently sold on eBay entitled 'La Faucheuse' confirms that a transformation has taken place (**Figure 3**), as this figure clearly and closely resembles the English Reaper, although it appears to still have female attributes, such as thinner, more delicate forearms, wrists and hands. This somewhat effeminate, cloaked skeletal figure carries a scythe, has no blindfold, and has acquired an hourglass. The male/female contrast may be reinforced by the fact that the word for death is masculine in Gaelic and German, and the masculine gender may have been inherited in English, in which it came to denote a male personification, and '*la mort*' (death, in French) is a feminine-gender word, which may, at least partially, account for the female personification. Other personifications of death include Ankou, in Brittany, who is a living, male figure, and whose creation might be partially attributed to the fact that the word death is masculine in Celtic.¹

Throughout the same period of history, the image of the Grim Reaper has remained consistent. Early depictions of Death prior to the institution of reaping include skeletons and cloaks and by the 17th century the Reaper image that is so familiar in modern English culture was clearly in place. A small carving over the door of St. Andrew's Church in Barningham, UK, dated 1640, depicts a skeleton carrying a scythe and an hourglass and wearing a cloak. This image is seen today in posters, figurines, movies, etc. In English, the term Grim Reaper is reserved for only this mythical figure, which is consistent with the language's conceptualization of the Reaper. However, in French, the term '*la Grande Faucheuse*' is now currently used to refer to the untimely demise wreaked by tuberculosis (as confirmed by several Librarians at the *Bibliothèque nationale* in Paris, June 2006), as well as to cases of bankruptcy in the business world.

3. ENGLISH INFLUENCE. It is possible that representations of the English concept of the Grim Reaper, with its attributes, abundant in American literature, have facilitated the change in the concept of Death in French culture. Edgar Allen Poe, famous for all things macabre, wrote many short stories in the early 1800's, which included skeletons and scythes. The *Pit and the Pendulum* describes monks wearing cloaks, as well as skeletons and a scythe in reference to time. *The Gold Bug* refers to a skull and a scythe and *A Predicament* refers to a scythe, also in reference to time. There are many more examples in Poe's work, which greatly influenced French literature in many ways during that time, particularly in French poetry (Rid-del 1995, Wetherill 1962, Cambiaire 1970). Therefore, by association, concepts such as the Reaper would have influenced French literature, as well. In addition, Longfellow's collection of poetry entitled *Voices of the Night* (1838) contains 'The Reaper and the Flowers,' a poem that clearly references the personification of Death as the Reaper, carrying a sickle and acting on someone else's behalf. The first stanza of 'The Reaper and the Flowers' reads:

There is a Reaper whose name is Death
And, with his sickle keen,
He reaps the bearded grain at a breath,
And the flowers that grow between.

In this stanza, we note the personification of Death as a male Reaper, who carries a sickle, and reaps grain and the flowers growing among the grain.

In 1856, the poem 'Mors' was included in the collection entitled *Les contemplations*, written by Victor Hugo. In it, we see the same clear connection between Death and la Fau-cheuse, who has now become a skeleton with bony fingers and rays of light visible between the bones of its rib cage (line 1: *Je vis cette faucheuse* 'I saw that reaper', line 3: *Noir squelette laissant passer le crépuscule* 'Black skeleton allowing the dusk to show through it', and line 14: *Des mains aux doigts osseux sortant des noirs grabats* 'Hands with bony fingers emerging from black pallets'). While a transition toward the English version of the Reaper appears to exist in this poem, so do some of the traditional French attributes, such as female gender and the implications of greatness—*elle changeait en désert Babylone* 'changing Babylon into a desert'—which exist still today in the French concept of la Grande Faucheuse. Longfellow studied and taught modern languages and traveled throughout Europe, providing ample opportunity for his work to influence French literature. Also of note here is the fact that Longfellow's poem appeared almost 20 years before Hugo's, that Hugo had read Longfellow and held him in high esteem ('Victor Hugo saluted Longfellow as a man who brought honor to America... he was clearly the uncrowned poet laureate' [Hirsh 14:1964]), and that Hugo may have borrowed some of the attributes of Death from Longfellow's Reaper, possibly to render homage to him. Part of our thesis is that English, or more exactly American, literary icons such as Longfellow and, of course, Edgar Allen Poe were admired by their French literary contemporaries, and therefore influenced Hugo and other French writers and poets, who then modified the French representation of la Grande Faucheuse to the point of bringing it very close to the English representation of the Grim Reaper, a modification noted in the visual arts, as well.

4. CONCLUSION. In conclusion, we feel that we have presented an example of intercultural concept blending, in which the French culture's 17th-century representation of la Fauchaise was already an intracultural blended concept, perhaps with Lady Justice or the goddess Diana, or both. It then evolved to become very close to the English culture's representation of the Grim Reaper. Without doubt, the French concept of la Fauchaise originated as a very different, perhaps even vague, concept that developed over a long period of time and acquired its current features only recently (20th century). Current technological advances such as television and the internet have sealed the Reaper's fate in French and hence the current Reaper-like eBay image of la Fauchaise will prevail, demonstrating the potential of long-term exposure to another culture to increase the likelihood that one culture's icons will cross over and become one token in the set of another culture's icons. One might think of the Michelin man as a French icon that has entered English culture through television commercials. Yet, might one envision concept blending between the Michelin man and the Jet-puffed Marshmallow man, or the Pillsbury doughboy? Although many factors contribute to the formation of a concept, such as culture and cognition, certain concepts may be equivalent for different cultures, as well as being subsequently influenced by other cultures. Also, certain concepts are clearly subject to cultural instantiation after they are formed, and this instantiation accounts for different representations of the concept in different languages, either overtly or covertly. Therefore, concept blending should also be examined from an intercultural point of view, and not uniquely from an intra-cultural point of view. In the case of the Grim Reaper and la Grande Fauchaise, the individual instantiations are covertly different but the implications of this difference, for translation and conceptual domains, mapping and blending are more indicative of how separate and distinct various cultures actually are from each other. Indeed, how can a bilingual dictionary pretend to offer the 'translation' of a concept, when the two concepts in question are actually very different? And, by extension, how can intercultural communication take place effectively when differences in gender, semantic fields and connotations, are not taken into account in the presentation of two apparently very similar, but inherently very different, concepts.

¹ Our theory, which is not undisputed (Guthke 1999), was partially substantiated during a discussion regarding this point at the LACUS 2006 conference (Toronto, Ontario, Canada, August 2006), thanks to the linguistic expertise of Robert Orr and others.

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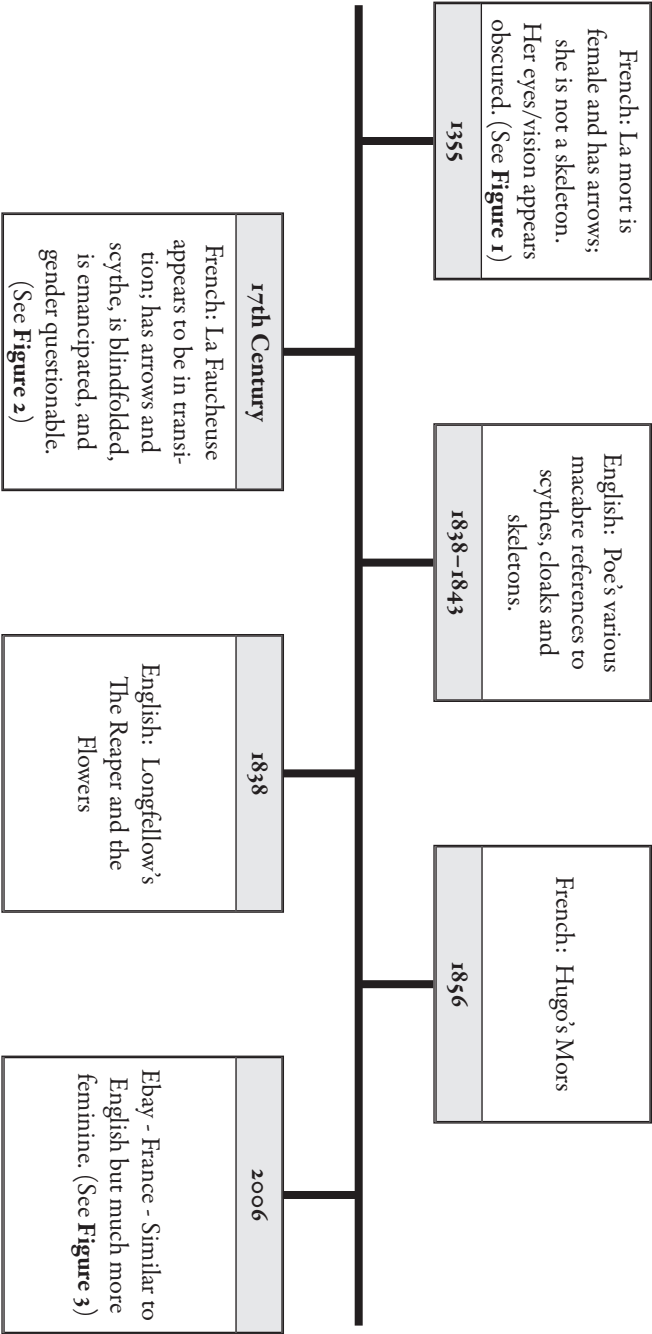
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WEBSITES

- <http://web.ubc.ca/okanagan/critical/faculty/lcard.html>. [Note: The PowerPoint presentation of this paper can be viewed by clicking on the link entitled 'The Grim Reaper vs. La Grande Faucheuse' at this address.]
- <http://www.lamortdanslart.com/divers/divers.htm> (accessed March 3, 2007).
- http://www.norfolkcoast.co.uk/curiosities/cu_grimreaper.htm (accessed March 3, 2007).
- http://www.pantheon.org/areas/gallery/folklore/folklore/grim_reaper.html (accessed March 3, 2007).
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APPENDIX: TIMELINE



CONSONANT-RHOTIC CLUSTERS IN SOUTHWESTERN ONTARIO FRENCH: A STUDY OF RHOTIC VARIATION AND SCHWA EPENTHESIS

IVAN CHOW & FRANÇOIS POIRÉ
The University of Western Ontario

AS A PART OF THE RESEARCH PROJECT *Phonologie du français contemporain* (Durand, Laks & Lyche 2003), this research examines certain idiosyncracies found in the variety of French spoken in Southwestern Ontario, specifically in the Windsor area. Past research indicates that the phonetic realization of Canadian French dialects is often subject to the influence of English (e.g. Nadasdi 2005, Beniak & Mougeon 1989). As a result, certain phonetic patterns typically found in Standard French are realized differently in these dialects. This study investigates the realization of consonant-rhotic (CR) clusters in Windsor French. Speakers of this dialect alternate between [ʁ], the dorsal fricative commonly found in Standard and Laurentian French (cf. Walker 2001), [ɹ], the alveolar approximant commonly found in North American English, and [ɾ], the alveolar tap, which is absent in both Standard French and North American English. As attested in Colantoni and Steele (in press, 2006) for Laurentian French, an epenthetic schwa [ə] was also found within certain clusters. CR-clusters were extracted from the recorded speech of four female native speakers of Windsor French. By way of phonetic and statistical analyses, we sort out significant factors that influence rhotic variation and schwa epenthesis in order to understand the phonological and sociolinguistic impacts on these sound patterns. Results show that rhotic variation is mainly influenced by the phonological properties of the initial consonant, as well as the presence vs. absence of schwa epenthesis; phonetic influence of English also plays a significant role. In terms of schwa epenthesis, speaker identity and speech style were significant factors. The phonological properties of the initial consonant and those of the vowel following the cluster were significant. Rhotic variation also plays an important role in influencing the appearance of schwa epenthesis.

1. THEORETICAL BACKGROUND. The realization of the rhotic in CR clusters in Southwestern Ontario French (henceforth referred to as Windsor French) and, indeed, whether a cluster is broken up by epenthesis, depends on the phonological properties of the consonant that precedes the rhotic as well as a number of other factors. Given the difference in phonological properties between rhotic and other consonants, CR-clusters undergo different phonetic changes depending on the combination (cf. Colantoni & Steele, in press, 2006 for Spanish and Laurentian French, Côté 2004 for Laurentian French). Colantoni and Steele found that, in Laurentian French, the voicing of the dorsal fricative rhotic changes according to the voicing of the preceding consonant, which suggests that a process of assimilation is in play. On the other hand, schwa epenthesis tends to occur in an environment in which the two members of the cluster are similar in terms of voicing, place

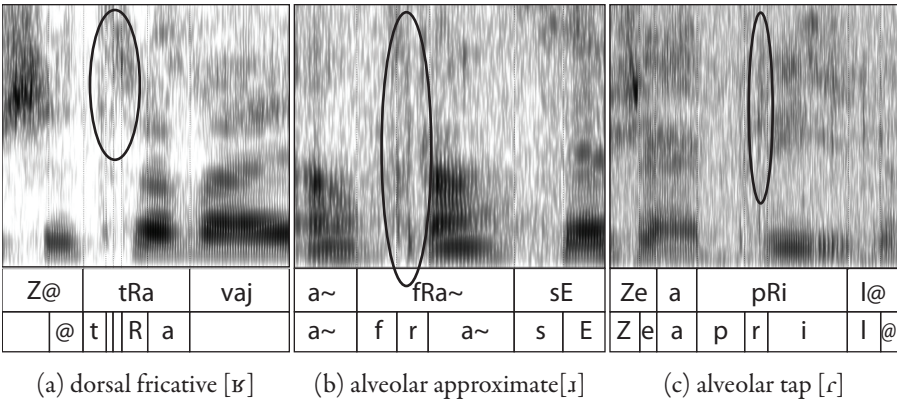


Figure 1. Spectrographic display of the three varieties of rhotics: dorsal fricative, alveolar approximant and alveolar tap.

of articulation and manner. As a result, consonant-liquid (including CR) clusters ‘may exhibit asymmetries in realization related to one or all of the (i) type of liquid, (ii) stop voicing specification, and (iii) manner of both members of the cluster’ (Colantoni & Steele 2006: 3). In light of these results, we investigated the phonetic realization in CR-clusters in Windsor French. As Canadian French is often reported to be subject to influence from English (O’Shaughnessy 1981, Straka 1979, Tousignant 1987, Walker 2001), the alveolar approximant, commonly attested in North American English, was found in Windsor French as well. In addition to the alveolar approximant, the fricative and the alveolar tap were also found. Hence, the presence of three different rhotic varieties makes the analysis of CR-clusters in this dialect an especially challenging and interesting task. In this article, we give an overview of the phenomena under study: rhotic variation and schwa epenthesis before getting into detailed descriptions of the methodology in section 2. Section 3 provides detailed descriptions of our statistical results. Discussions of the results are found in section 4. Conclusions to our investigation are given in section 5.

1.1. RHOTIC VARIATION. In the phonetic analysis of the recordings of four native speakers of Windsor French, we found three different phonetic realizations for the rhotic.

In **Figure 1**, (a) is a spectrographic display of the dorsal fricative [ʁ], most commonly found in Standard and Laurentian French (cf. Colantoni & Steele 2006, Walker 2001). This type of rhotic is characterized by a patch of low-intensity energy across the higher frequencies.

The second type of rhotic found in CR-clusters is the alveolar approximant, which is common in North American English. As shown in (b), this type of rhotic can be recognized in the spectrogram by multiple striations.

The third rhotic variety is the alveolar tap [ɾ] shown in (c), which is not found in English, Laurentian or Standard French, but is similar to the middle consonant of the North

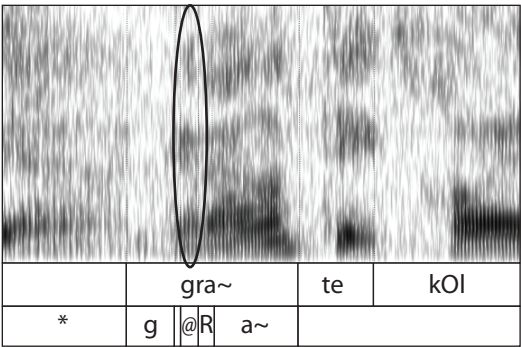


Figure 2. Spectrographic display of an epenthetic schwa [ə]

American pronunciation for the word *butter*. This sound can be recognized by a single visible striation across all frequencies.

1.2. SCHWA EPENTHESIS. In addition to rhotic variation, the epenthetic schwa was also found in CR-clusters in Windsor French. As shown in **Figure 2**, the short vowel [ə] between [g] and [ʁ] can be recognized by the presence of three formants for which the frequencies correspond to those of the schwa.

1.3. QUESTIONS. We intend to determine the conditioning factors that influence rhotic variation and schwa epenthesis. Given that both rhotic variation and schwa epenthesis occur within CR-clusters, we are particularly interested in understanding the relation between the two phenomena, i.e. whether the presence of schwa epenthesis is a pre-condition for the phonetic realization of a particular type of rhotic or vice versa.

2. METHODOLOGY. Using Praat (Boersma & Weenink 2006), we analyzed and encoded the recordings of four female native speakers of Windsor French (Poiré & Kelly 2003) within the *Phonologie du français contemporain* (PFC) corpus. Subjects’ ages range from 16 to 88. They were divided into two groups based on the presence and absence of audible phonetic influence of English. The two younger speakers (16 and 41) happened to be the ones with audible English influence, whereas the two older speakers (60 and 88) do not show such influence.

Thirty-two minutes of recorded speech were collected in two different speech styles: read passage (three minutes) and directed conversation (five minutes). The recorded speech was segmented in tiers of different phonological units, e.g. intonational phrase, word, syllable, phoneme, etc. Phonetic annotation was done using SAMPA (<http://www.phon.ucl.ac.uk/home/sampa/index.html>), a machine readable phonetic alphabet. In total, 331 CR-clusters were encoded. Special tiers were created to record the variety of rhotics and whether an epenthetic schwa was found in the clusters. Identities of the consonant preceding the rhotic and the vowel following the rhotic were recorded for

	[R] total	Fricative	Alveolar Approximant	Alveolar Tap	Schwa Epenthesis
FF2 conv.	51	6	41	4	26
FF2 read	28	6	21	1	18
FF1 conv.	30	3	21	6	12
FF1 read	45	5	39	1	19
EE2 conv.	47	7	28	12	4
EE2 read	41	14	23	4	3
EE1 conv.	52	30	16	6	6
EE1 read	38	14	19	5	4

Table 1. Distribution of different types of rhotics and schwa epenthesis with respect to speakers and speech styles.

phonological analysis. The encoded ensembles of tiers were then transferred onto spreadsheets and prepared for statistical analyses.

Variable Rule (Varbrul) analyses were conducted using GoldVarb (Robinson *et al.* 2001) to determine the influence of different conditioning factors (such as the type of consonant within the cluster) in the phonetic realization of the CR clusters. The variety of rhotic in the clusters (fricative [ʁ], alveolar approximant [ɹ] and alveolar tap [ɾ]), and the presence/absence of schwa epenthesis were treated as dependent variables in two separate analyses. In one analysis, rhotic realization was treated as the dependent variable, while schwa epenthesis was treated as an independent variable, and vice versa for the other analysis. Other independent variables included speaker identity, age, presence vs. absence of English influence, as well as the vowel following the cluster and the voicing, manner and place of articulation of the initial consonant of the cluster. For the rhotic variation analysis, Varbrul can only yield viable data in binomial analyses. In order to see the full picture, we had to conduct three separate analyses, grouping two variables together at a time. All in all, the comparison between alveolar approximant and alveolar tap+fricative yielded the most significant results. As for the presence vs. absence of schwa epenthesis, only one binomial analysis was necessary.

3. RESULTS. We now present the statistical results from our analyses; discussion of the results is found in section 4. The total number of occurrences of rhotics and schwa epenthesis is given in Table 1. FF refers to speakers who do not show audible influence of English, whereas EE refers to speakers with English influence.

The leftmost column identifies the speaker and speech style. A quick comparison of the numbers for schwa epenthesis (rightmost column) for FF1, FF2 with those for EE1 and EE2 indicates that schwa epenthesis occurs more frequently amongst speakers without English influence (FF1 and FF2). The same speakers also used the alveolar approximant more frequently than their counterparts. On the other hand, numbers in the fricative column indicate that EE1 and EE2 tend to use the fricative-R more frequently than FF1 and FF2, despite

INITIAL CONSONANT	ALVEOLAR APPROXIMANT	ALVEOLAR TAP	FRICATIVE
[f]	27/ 79%	2/6%	5/15%
[v]	18/ 95%	1/5%	0/0%
[b]	3/ 75%	0/0%	1/25%
[p]	76/ 68%	13/12%	22/20%
[d]	1/100%	0/0%	0/0%
[t]	46/ 40%	20/17%	50/43%
[g]	28/100%	0/0%	0/0%
[k]	4/ 80%	0/0%	1/20%
[st]	4/ 25%	3/25%	6/50%
[df]	1/100%	0/0%	0/0%
Total number of tokens (C+R): 331			

Table 2. Distribution of different types of rhotics and schwa epenthesis with respect to initial consonant.

the fact that this type of rhotic is frequently attested in Standard and Laurentian French, and not in English.

3.1. RHOTIC VARIATION. **Table 2** shows the types of initial consonant in the analyzed clusters and the frequency of each type of rhotic realized in the clusters. For each consonant/rhotic type, the first number indicates the number of occurrences found in the recordings, the second number indicates its frequency amongst all clusters with the same initial consonant.

Although most of the clusters we examined were single consonant clusters (consonant + rhotic) commonly found in French (e.g. [pR] as in *prendre*), a small number of double consonant clusters (consonant + consonant + rhotic) were found (e.g. [stR] as in *stressant*). In addition, the combination [df] was found across two words in *de français* when the [ə] in *de* was omitted. In 8 out of 10 cases, different types of rhotics were found to co-occur with the same consonant. Yet, the alveolar approximant is realized exclusively (after the initial consonants [g] and [df]). Since only one case of [df] was found, it is difficult to draw any viable inference from the results. On the other hand, results for the initial consonant [g] indicate the alveolar approximant as the *only* variety of rhotic realized in this type of clusters.

Separate binomial Varbrul analyses were conducted for the three variables in rhotic variation. Although similar results were yielded, the number of clusters with alveolar approximant far exceeds those of the other varieties. Thus, the binomial analysis alveolar approximant vs. fricative+alveolar tap turned out to be the most indicative. We now look at results from the GoldVarb binomial analysis for alveolar approximant vs. alveolar tap+fricative. We look first at sociolinguistic factors, then at phonological ones.

Amongst the social factors under analysis, language influence turned out to be the only significant factor affecting the variety of rhotic realized in the clusters. On the other hand,

Language Influence		Alveolar Approximant	Alveolar Tap+ Fricative	%	Factor Weight
	French	122	154	79	0.672
	English	86	178	48	0.350
	Range : 32				

Table 3. GoldVarb analysis results for significant sociolinguistic factors in rhotic variation.

Place of articulation of the initial consonant		Alveolar Approximant	Alveolar Tap+ Fricative	%	Factor Weight
	Labial	126	170	74	0.610
	Coronal	50	129	38	0.284
	Velar	32	33	96	0.788
Range: 50					
Voicing of the initial consonant	Unvoiced	157	279	56	0.416
	Voiced	51	53	96	0.856
	Range : 44				
Post-R Context (Vowel following the [R])	Oral Vowel	139	244	56	0.408
	Nasal Vowel	66	80	82	0.760
	Silence	3	8	37	0.447
	Range: 35				
Presence of Epenthetic Schwa	Absent	130	249	52	0.412
	Present	78	83	93	0.744
	Range: 33				

Table 4. GoldVarb analysis results for contextual phonological factors in rhotic variation.

speech style, age and identity of the speakers were not significant factors in determining the phonetic realization of the rhotics. In **Table 3**, factor weight is an indication of the importance of the factor (namely, language influence) in favouring the realization of the alveolar approximant. A value above 0.5 indicates that the independent variable favours the occurrence of the alveolar approximant (cf. Guy 2003). The significance of the factor is also reflected in the range, which is derived from the difference between the highest and the lowest factor weight values. The greater the range, the more significant the factor. As mentioned in section 2, speakers without English influence (referred to as FF1 and FF2 in the table) are more likely to produce the alveolar approximant (factor weight = 0.672).

Table 4 shows the analysis results for the significant contextual phonological factors. Amongst these factors, place of articulation of the initial consonant was the most significant factor in determining the choice of rhotic realization. The alveolar approximant is

Initial Consonant	Schwa Epenthesis	%	Initial Consonant	Schwa Epenthesis	%
[f]	0	0	[g]	29	58
[v]	7	37	[k]	1	3
[b]	6	27	[s]	0	0
[p]	25	15	[st]	0	0
[d]	1	12	[df]	0	0
[t]	11	9	Total number of tokens: 331		

Table 5. *Distribution of schwa epenthesis amongst different initial consonants.*

most favoured by velar consonants, followed by labials, and disfavoured by coronals. The second most significant factor turned out to be the voicing of the initial consonant. With a factor weight of 0.856, the alveolar approximant is strongly favoured by a voiced initial consonant. The vowel following the cluster also played a role in the realization of the rhotic: the alveolar approximant is more likely to be produced if followed by a nasal vowel. Finally, the presence of schwa epenthesis in the CR-cluster also favours the alveolar approximant (factor weight = 0.744).

3.2. SCHWA EPENTHESIS. A total of 331 clusters were analyzed for schwa epenthesis. The distribution of schwa epenthesis is shown in **Table 5**.

Only a small number of schwa epenthesis were found in CR-clusters. At a glance, [g] (the voiced velar stop) turned out to co-occur most often with schwa epenthesis (58%) amongst different initial consonants; [k], [t], [d] and [p] tend to disfavour schwa epenthesis. More specifically, schwa epenthesis tends to occur much more often after voiced than unvoiced consonants. In terms of place of articulation, it co-occurs most often with velars, followed by labials, then coronals.

Only one binomial analysis was needed for schwa epenthesis analysis. The presence vs. absence of schwa epenthesis was treated as the dependent variable here, whereas rhotic variation was treated as an independent variable. In the tables below E indicates the presence of schwa epenthesis, whereas N indicates the absence of epenthesis.

Speaker identity and speech style turned out to be the only significant social factors in determining the presence and absence of schwa epenthesis. The section at the top of **Table 6** (overleaf) shows that speakers without English influence (FF1 and FF2) were much more likely to produce an epenthetic schwa in CR-clusters (factor weight = 0.888 and 0.809) than those with audible English influence (factor weight = 0.155 and 0.204). In terms of speech style, subjects were slightly more likely to produce schwa epenthesis in passage reading than directed conversation.

In terms of contextual phonological factors, the initial consonant, the type of rhotic within the cluster, as well as the vowel immediately after the cluster all play a significant role in determining the presence and absence of schwa epenthesis. If we compare the range of the factors in **Table 7** (overleaf), the place of articulation of the following vowel turned

		E	N	%	Factor Weight
Speaker Identity	FF2	37	79	46	0.888
	FFI	30	75	40	0.809
	EE2	7	88	7	0.155
	EEI	9	90	10	0.204
	Range: 73				
Speech Style	Reading	40	152	26	0.606
	Conversation	43	180	23	0.401
	Range: 20				

Table 6. GoldVarb analysis results for significant social factors in schwa epenthesis.

		E	N	%	Factor Weight
Place of articulation of the initial consonant	Labial	41	170	24	0.435
	Coronal	16	129	12	0.477
	Velar	26	33	78	0.845
	Range: 41				
Place of articulation of the following vowel	Medium	8	76	10	0.189
	Back	17	62	27	0.529
	Front	58	186	31	0.636
	Range: 45				
Aperture of the following vowel	Medium	45	179	25	0.602
	Open	32	101	31	0.466
	Closed	6	44	13	0.204
	Range : 40				
Rhotic Variation	Fricative	3	85	3	0.292
	Tap	2	39	5	0.365
	Rolled	78	208	37	0.615
	Range: 32				

Table 7. GoldVarb analysis results for contextual phonological factors in schwa epenthesis.

out to be the most influencing factor, with front vowel co-occurring most often with schwa epenthesis. As for other factors, velar consonants in the initial position of the cluster, open vowels, and the alveolar approximant all seem to favour schwa epenthesis. In fact, in all but 5 cases, schwa epenthesis co-occurs with the alveolar approximant.

4. DISCUSSION.

4.1. RHOTIC VARIATION. Our results indicate that in Windsor French, despite the fact that the alveolar approximant is more commonly attested in English, speakers with no audible English influence tend to use this variety more frequently than those with English influence. Although some suggest that the use of this rhotic variety is due to the long standing contact between English and French in the area (e.g. Nadasdi 2005, Beniak & Mougeon 1989), Kelly (2006) indicates that this would be a simplified explanation for a linguistic situation that appears to be much more complex. On the other hand, the fricative variety was used more frequently than the alveolar approximant by speakers with audible English influence. We can only speculate that the French media to which these speakers are exposed is predominantly in Laurentian or Standard French. As a result, these subjects might have adopted the fricative of these varieties.

As for the phonological factors, our results indicate that the place of articulation and the voicing of the initial consonant are significant factors in the choice of rhotic variety. Although more varieties of rhotics are found in Windsor French than in Québécois French, interestingly, the phonetic realization of the rhotic seems to be constrained by the same factors as in Laurentian French (cf. Colantoni & Steele, *in press*).¹

Finally, the presence vs. absence of schwa epenthesis was found to be a significant factor concerning rhotic variation. We discuss the implications of this observation in detail now.

4.2. SCHWA EPENTHESIS. The place of articulation of the initial consonant, certain phonological properties of the vowel following the cluster, and rhotic variation turned out to be significant phonological factors in determining the presence or absence of schwa epenthesis. In terms of social factors, speaker identity and speech style turned out to be significant in triggering schwa epenthesis. The two older speakers with no audible English influence (FF1 and FF2) produced schwa epenthesis more frequently than the younger ones (EE1 and EE2). Interestingly, rhotic variation is also a significant factor in this analysis. This ties in with the observation that FF1 and FF2 tend to use the alveolar approximant more frequently, and with a factor weight of 0.615, the alveolar approximant favours the appearance of schwa epenthesis. Given that rhotic variation and schwa epenthesis are significant independent factors for each another, we are hence presented with the question as to whether rhotic variation is a pre-conditioning factor for schwa epenthesis, or vice versa?

4.3. WHICH ONE COMES FIRST? The alveolar approximant or schwa epenthesis? The answer to the question, we believe, lies in the statistical analysis. In all but 5 cases, schwa epenthesis co-occurred with the alveolar approximant (cf. Table 7). However, not all instances of alveolar approximant co-occurred with schwa epenthesis. Since the number of instances of alveolar approximant is greater than that of the schwa epenthesis, we are able to deduce that the alveolar approximant is a pre-conditioning factor for schwa epenthesis, and not the other way around.

4.4. AGE VS. SPEAKER IDENTITY. Since the speech of only four female speakers was analyzed, we are unable to determine whether our observations are viable in male speakers as

well. In addition, since the age of the speakers happened to correspond to the presence vs. absence of audible English influence, we are therefore unable to tease apart factors such as age and speaker identity (individual speech style) as two separate social factors. In other words, the speech patterns could have been caused by aging, or idiosyncrasies in the subjects' speech patterns. Hence, we need to conduct further investigations with more than one subject from each age-group in order to tease apart these factors.

5. CONCLUSIONS. In this study, we analyzed consonant-rhotic clusters in Southwestern Ontario (Windsor) French and investigated two phonetic phenomena: rhotic variation and schwa epenthesis. As for rhotic variation, the presence vs. absence of English influence, and the phonetic contexts, namely the voicing and place of articulation of the initial consonant, are significant pre-conditioning factors. Speaker identity and speech style play an important role in triggering schwa epenthesis. Phonetically, the initial consonant and the vowel following the CR-cluster were also important factors in predicting the appearance of schwa epenthesis. While rhotic variation and schwa epenthesis were significant factors for each another, rhotic variation was determined to be a pre-conditioning factor for schwa epenthesis.

¹ Although the phonological contexts of rhotic variation and schwa epenthesis are found to be similar, it is worth noting that Colantoni and Steele (in press) used controlled speech evoked by specially designed test sentences *Je dis ____ une fois encore* 'I say ____ once again', whereas recorded spontaneous speech was used in our study. As a results, different speech behaviors might have been observed in the two studies due to different experimental methodologies.

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COGNITIVE SOCIOLINGUISTICS: A VIABLE APPROACH TO VARIATION IN LINGUISTIC THEORY

LYNN CLARK
University of Edinburgh

THE AIM OF THIS PAPER¹ is to reconsider aspects of the relationship between sociolinguistic variation and linguistic theory. According to Casillas-Martínez, there have been two main approaches to sociolinguistic variation in linguistic theory. The first of these, the 'exclusion approach', has been a dominant trend in generative linguistics throughout the twentieth century (2003:33). Section 1 begins by tracing the history of this approach and questions the evidence that has been provided in support of it. Section 2 reviews a sample of research that is characteristic of the second approach—'variation as a side effect' (2003:34). This approach often results from the recognition that linguistic theory should be capable of explaining sociolinguistic variation and so attempts are often made to modify existing approaches that are, in all other respects, asocial. I will argue that, while these accounts appropriately question the legitimacy of the distinction between linguistic theory and sociolinguistic variation, their proposals to incorporate variation are problematic because they do not fully incorporate the social meaning of linguistic variants. In order to improve the synthesis between sociolinguistic variation and theories of language structure, I will argue that it is necessary to adopt a linguistic theory in which the social meaning of linguistic variation is a pre-existing aspect of the framework. Section 3 explains that this is the case with the theoretical approaches of the Cognitive Linguistics movement. I will therefore argue that these frameworks are fundamentally compatible with accounts of sociolinguistic variation and provide a more viable approach to socially motivated variation in linguistic theory.

1. THE EXCLUSION APPROACH. The complete exclusion of sociolinguistic variation from the concerns of theoretical linguistics can be traced to the 'structuralist' movement and the work of Ferdinand de Saussure in the early 20th century, although it was popularised in mainstream linguistic theory by the generative tradition that followed.

It seems, from the writings of *Cours de linguistique générale*,² that Saussure was dissatisfied with the shape of linguistics. Although the Neogrammarians had made 'great advances' in the field by establishing links between sequences of language change, according to the Course (p. 5/19), they had failed to explain the fundamental problem of linguistics: that of defining language as an object of scientific study. Until this was done, linguistics could not establish itself as a 'true science' (p. 3/16).

Saussure was acutely aware of the complexities involved in such a task. The Course explains that language is at once a dual activity on many levels; it is a combination of articulation and perception; sound and meaning; individual and social; present and past (pp.

8–9/23–25). However, rather than attempt to create an all-encompassing ‘science of language’ that could incorporate each of these facets, Saussure’s solution was to propose that ‘the linguist must take the study of linguistic structure as his primary concern...’ (p. 10/25). To do this, he had to define ‘linguistic structure’ as an object of study and show that it was different from all other aspects of language. This led Saussure to make a fundamental distinction between *langue* and *parole*.

Langue is described in the *Course* as the abstract formal linguistic system which exists in the mind of every speaker or, more accurately, community of speakers; it is acquired in the community and every member of that community will share an identical homogeneous *langue* (pp. 13–14/30). *Parole*, on the other hand, is the realisation of actual speech. This is described in the *Course* as the ‘execution of *langue*’. Culler explains that in the act of *parole*, the speaker selects and combines elements of the linguistic system and gives these forms a concrete manifestation or realisation (1976:30). Linguistic variation, therefore, originates in *parole* but can only become a change to the linguistic system when it is accepted by the speech community and therefore becomes part of *langue* (Joseph 2004:48).

Aside from the initial description of the distinction, there is very little mention of *parole* in the *Course* because it insists that the primary strategic function of distinguishing between *langue* and *parole* is to isolate the ‘true’ object of linguistic enquiry and so ‘disregard everything which does not belong to its structure as a system...’ (p. 21/40). All linguistic variation was therefore relegated to *parole* and considered unimportant to the ‘true science’ of language.³

Although Saussure was responsible for introducing the dichotomy between language structure and language use, it was Chomsky who strengthened it further by advocating a more rigid dichotomy between ‘competence’ and ‘performance’ (1965:3–4).⁴

This is described as the distinction between ‘the speaker-hearer’s knowledge of his language’ and ‘the actual use of language in concrete situations’ (Chomsky 1965:4). In other words, the former relates to the mental structures that govern linguistic behaviour and the latter to linguistic behaviour itself. In many respects, competence is therefore similar to Saussure’s concept of *langue*. However, unlike *langue*, competence is not considered to be a social product. For Chomsky, linguistic competence is biologically determined, universal, and a property of the individual, not of the community. This has been articulated recently as the ‘innateness hypothesis’, i.e. the assumption that language structures are not learned, they are innately present in the human mind and they are triggered by linguistic ‘input’ (see Pinker 1994, Smith & Tsimpli 1995).⁵

Like Saussure, Chomsky argues that the structural characteristics of language must be the linguists’ primary object of concern. The key purpose of linguistic theory is to describe the combinatory rules or ‘generative grammar’ of a language. Chomsky’s earlier work (1957, 1965) implies that sociolinguistic variation is simply uninteresting from a theoretical perspective. This is articulated more explicitly in later work in which he compares the study of sociolinguistic variation with ‘butterfly collecting’: ‘If you like butterflies, that’s fine; but such work must not be confounded with research...’ (1979:57). Chomsky believes that studies of sociolinguistic variation in language use constitute ‘good descriptive linguistics’ (1979:55) and that they are helpful in combating linguistic

prejudices but that they are also 'banal' because they do not attempt to relate their findings to linguistic theory.

The theory deficit is a common criticism of variationist sociolinguistics,⁶ yet sociolinguists question exactly which theoretical advances they should relate their findings to. There is no single theoretical model that is unanimously favoured amongst linguists (this article should serve as evidence of this). Also, as Chambers (1995:29) suggests, certain 'advances' in linguistic theory (within the generativist tradition at least) have either now been discarded or been so radically revised that any attempt to synthesise sociolinguistic accounts of language change and variation with these theoretical proposals would have seriously weakened the variationist cause. Regarding this dichotomy between theoretical linguistics and sociolinguistics, Trousdale observes that 'it would seem that the battle lines are fairly well drawn' (2003:373). Yet there is evidence from both sides of the division that the strict dichotomy has begun to be questioned. For example, from the 'sociolinguists' side of the fence, Cameron argues that 'if sociolinguistics is to progress from description to explanation...it is obviously in need of a theory linking the "linguistic" to the "socio"' (Cameron 1997:59).

From the 'theorists' side, Hudson explains that such a suggestion is entirely possible because 'it is possible to formalize the content of sociolinguistic knowledge, and to do so using the same formal apparatus as for structural knowledge' (1986:1075).

Perhaps we should therefore at least question the necessity of the assumed distinction. Why should variation automatically be excluded from accounts of language structure? Saussure's explanation for the necessity of the division was that we must focus our attention on *langue* because 'it is the one thing that is independently definable and provides something our minds can satisfactorily grasp' (p. 9/25). Of course, this is clearly not the case; *langue* has proven to be an extremely difficult notion to define. Chomsky's justification for the distinction seems even weaker. He explains that it was the position assumed by his predecessors (i.e. Saussure and the structuralists) 'and no cogent reason for modifying it has been offered' (1965:4).

This is precisely the problem that Hudson (1986, 1996) finds with the exclusion approach, arguing that the debate over the exact nature of the distinction is futile because those who make such a distinction provide no evidence in support of their argument (1986:1056). Hudson (1986, 1996) illustrates his concerns with the example *sidewalk* (1996:245–7). He explains that speakers of English know (at least) four things about this word: They know its pronunciation, its meaning and its word class. This type of 'linguistic knowledge' is typically subsumed under the scope of linguistic competence and deemed worthy of investigation in theoretical linguistics. However, speakers of English also know that this word is an Americanism. This is typically regarded as knowledge of language use and therefore not explored in theories of language structure. Yet if this is also an aspect of 'linguistic knowledge' then, Hudson asks, why shouldn't this type of fact also belong with linguistic competence? The boundary that is assumed to exist between 'linguistic' and 'non-linguistic' knowledge rests on a belief held in mainstream (generative) linguistic theory that linguistic competence is a unique (innate and universal) aspect of the total knowledge of an individual. However, this assumption in itself is extremely controversial (for an overview of

the current debate, see Pinker 1994 and Tomasello 1995). It therefore seems that those who continue to propose the distinction between 'linguistic' and 'non-linguistic' knowledge not only fail to question the legitimacy of the distinction but base their assumptions only on the logic they have inherited from the structuralist tradition.

2. SOCIOLINGUISTIC VARIATION AS A 'SIDE EFFECT'. It therefore seems clear that a theory of grammar that aims to be a comprehensive and realistic model of human language must fully incorporate the social facts of language use. This recognition has resulted in the second approach to sociolinguistic variation found in linguistic theory, described by Casillas-Martínez as 'variation as a side-effect' (2003:34). These approaches explain that linguistic theory should be able to explain linguistic variation and so attempts are often made to modify existing approaches that are fundamentally asocial.⁷

2.1 PRINCIPLES AND PARAMETERS. Wilson and Henry (1998) employ the concept of parameters to explain variable data in synchronic variation between Belfast English and Standard English. Parameters were introduced to generative linguistic theory in an attempt to explain variable outputs between linguistic systems. The general assumption is that variation between languages is the result of differences in parameter settings.⁸ They take this argument a step further and ask 'what if specific dialects of English can be shown to have their own parameter settings?' (1998:7). Re-examining data from Henry (1995) that deals with verb raising, they explain that, unlike Standard English, verb-raising in imperatives is possible in Belfast English and sentences like examples (1) and (2) are grammatical:

- (1) Read you that
- (2) Go you away (1998:9).

Wilson and Henry (1998:9) explain that, in a Principles and Parameters account of this variation, there are two possible grammars in Belfast English with respect to inverted imperatives: one allowing inversion with all verbs (so both examples 1 and 2 are grammatical) and one allowing only inversion with 'unaccusative verbs' (which they describe as verbs of motion, such as in example 2 above). There are therefore two different parameter settings in Belfast English and, for speakers who then switch between these two parameters and Standard English, there are three different parameters relating to verb raising. In order to accept this account, it is necessary to accept that speakers who vary between these forms are switching between three different grammars (see also Kroch 1994).

Wilson and Henry argue that their methods are capable of highlighting the interaction that exists between 'internal' and 'external' linguistic factors. However, in terms of their Principles and Parameters approach, they seem unable to explain why such variation exists at all. How can the numerous social motivations for linguistic variation and change that have been discovered in sociolinguistic research (such as age, class, gender, ethnicity etc.) also be incorporated into the Principles and Parameters approach? They recognize their limitations in this respect, explaining that they are 'not arguing that the systematic

variation found within Belfast English, or any other dialects, may be explained ONLY by invoking parameters' (1998:14).

2.2 MINIMALISM. Wilson and Henry's (1998) approach to variation in *Principles and Parameters* assumes that speakers can essentially have more than one system of grammatical knowledge and variation is therefore the result of decisions that speakers make about the choice of particular grammatical systems. The approach to variation assumed by Adger and Smith (2005) is similar to this as it also places an emphasis on 'choice'. However, Adger and Smith's account does not invoke a range of different grammatical systems to explain variation; rather there is only one grammatical mechanism assumed, 'containing universal mechanisms'.

The Minimalist account they propose (based on an adaptation of Chomsky's Minimalist Program, see Chomsky 1995, 2000, 2001) assumes the existence of two different types of syntactic features: those which carry a semantic interpretation (and are labelled interpretable) such as the feature [tense: past] in English and those which do not (and so are uninterpretable) such as the syntactic feature [*u*case: nominative] in English.⁹ Uninterpretable features must be checked by a matching feature during the derivation and be deleted. This means that only interpretable features will be delivered to the semantic component of the grammar. Morphemes will then be associated with the remaining feature bundles and whatever morphological operations that are triggered by these feature specifications (e.g. the addition of an affix) will then be performed. Finally, the grammar will perform the phonological operations necessary to achieve the surface form.

Adger and Smith examine variation in two morphosyntactic variables (*do* absence and *was/were* alternation) in data collected from Buckie, a fishing town in the north east of Scotland. Most dialects of English which display variation in *was/were* do so across all grammatical persons. In Buckie, however, there is variable use in all contexts except with the pronoun *they* (which can only occur with the plural form of the verb). *Do* absence appears to be restricted to negative declarative sentences and in contexts with 3rd person singular pronouns, NPs and plural NPs. In other words, both of these variables show a categorical and variable distinction in the patterning of variants. Also, use of the non-standard form in *was/were* variation is stratified by age across all variable contexts. The variation in *was/were* is therefore (at least partially) socially motivated, indicating that this variable is perhaps undergoing change in this community with younger speakers favouring the standard form. The data on *do*-absence shows no such pattern, suggesting that this variable is both stable and perhaps also less salient.

The Minimalist framework can account for this variation by proposing that 'variation arises from lexical items having, by the end of the syntactic derivation, the same interpretable feature specification coupled with different uninterpretable and phonological specifications' (Adger & Smith 2005:153). In other words, there are essentially two distinct syntactic inputs, or lexical items, to the system which can produce exactly the same semantic output. But if uninterpretable features are checked and deleted how can this result in different phonological outputs for these syntactic inputs? Adger and Smith confront this problem by assuming that checked features are, in fact, not deleted and that they are still accessible to the morphological component of the grammar leading to a difference in the 'spell out'

of syntactic inputs. For example, in order to explain the variation that occurs between '*was*' and '*were*', they assume the existence of two variants of the lexeme 'be' (arbitrarily labelled label *T* and *T2*) which give the same semantic output but which have different featural content, leading to a different 'spell out' of each variant at the surface form. If a speaker selects [be *T*] as the syntactic input, the unspecified features of case, number and person will be checked with the unspecified features of the pronoun and, if the pronoun is [pers 1] (i.e. 1st person plural) then the derivation will run and the 'spell out' will be *were*. However, the featural content of *T2* differs from *T* and the morphology will be sensitive to this, instead spelling out *was*.

They also provide a similar account of variation for *do*-absence, although they assume that this variation arises from the choice of morpheme associated with a lexical item by the 'spell out' mechanism. They explain that the framework can straightforwardly capture the variation in *do*-absence by assuming that the morpheme associated with the 1st and 2nd person singular has two forms: [+ affix] which is realised as '*do*' and [- affix] which is not realised overtly. Adger and Smith are therefore able to incorporate linguistic variation easily into the theoretical framework with little adjustment to the model.

The model that they propose assumes that variation is the result of a choice made by the speaker. Adger and Smith's explanation amounts essentially to the same as describing *was/were* variation as a choice between lexical items (cf. the choice between *sidewalk* and *pavement* discussed above) and *do*-absence as a choice between different allomorphs of a particular morpheme, although they claim that the choice is made at a deeper level of language structure (i.e. speakers do not choose '*was*' or '*were*'; they chose *T* or *T2* and this results in the output '*was*' or '*were*'). However, like Wilson and Henry, they do not explain why speakers make such a choice, because they do not incorporate the social meaning of these variants into the theoretical framework. They acknowledge that the variation may in part (at least in the case of *was/were* variation) be socially motivated, but they regard this as 'outside the grammar proper' (2005:173) and so outside of their scope of concern.

The approaches examined in this section therefore share Casillas-Martinez' notion of variation as a 'side effect'. They begin with a purely asocial theory of grammar and try to build in accounts of variation, but they only build in the results of such variation, leaving no place for the social motivation of the variation in the theoretical framework. Casillas-Martinez argues that 'we do not need a grammatical theory that gives us the right numbers for a socially meaningful variable, *what we need is a grammatical theory that links variables with social meanings...*' (2003:34, emphasis added).

The theoretical frameworks of the Cognitive Linguistics movement may offer this feature.

3. COGNITIVE SOCIOLINGUISTICS

3.1 THEORETICAL ASSUMPTIONS. Cognitive Linguistics is the general cover term applied to a range of theoretical approaches in modern linguistics that have been developed since the late 1970s. Cognitive Linguistic theories share with the generative tradition the belief that language is a 'cognitive' phenomenon in the sense that it is a product of the mind of the individual. However, they offer a radical alternative to mainstream generativist theories

of grammar, differing in several key respects, not least in that they aim to model the facts of linguistic structure as it is used and understood by speakers. Geeraerts summarises the difference between the theoretical traditions of generativists and cognitivists as follows:

The cognitive linguist is interested in our knowledge of the world, and studies how natural language contributes to it. The generativist linguist, conversely, is interested in our knowledge of the language, and asks how such knowledge can be acquired, given a cognitive theory of learning. (1995:113)

Specific theories within Cognitive Linguistics share certain basic assumptions regarding the nature of language in the mind. The first of these assumptions is that language acquisition should involve mechanisms that are not unique to learning language. If language is acquired through repetition and exposure, language structure therefore must emerge from language use. This means that language acquisition is considered to be a 'bottom-up' process, in opposition to the 'top-down' nature of generative grammar (Tomasello 2000). Theories which adopt this position have become known as '*usage-based*' models of language (Barlow & Kemmer 2000)¹⁰. Because the linguistic structure that is abstracted is largely determined by a speaker's previous experience (Langacker 1987:380), and because no two speakers will have had exactly the same linguistic experiences, each speaker will abstract a (minimally) different grammar. Linguistic variation between speakers is therefore inevitable and, in Cognitive Linguistics, already presupposed by the theoretical framework (Geeraerts 2003:1).

A second major difference between Cognitive Linguistics and generative theories is that Cognitive Linguistics assumes that linguistic structures and processes do not emerge from any specific language module of the mind but are instead regarded as instances of general cognitive abilities (such as perception, attention, memory, emotion, reasoning, inferencing, categorisation etc.). In other words, Cognitive Linguistic theories share a fundamentally *non-modular view of language*. This has several important consequences for our approach to variation in linguistic theory. For instance, by claiming that language is essentially non-modular, Cognitive Linguistic theories are recognising that the division between langue and parole or competence and performance is arbitrary. 'Linguistic' knowledge is inextricably entwined with 'non-linguistic' knowledge or, as Goldberg states: 'knowledge of language is knowledge' (1995:5).

This is articulated more precisely in the assumption that *meaning is encyclopaedic*. Cognitive Linguists (invoking evidence from cognitive psychology) have argued that meaning is part of a larger system of interlocking networks of knowledge in cognition (see Hudson 2007:8). In this respect, the meaning of a linguistic unit cannot simply be equated with a narrow set of dictionary definitions. It involves all of our general knowledge, including *social* and *pragmatic* knowledge that we associate with the linguistic unit (such as the 'type' of speaker likely to use this form, the type of speech event in which it is likely to be used etc.). Encyclopaedic knowledge is therefore embedded in a more general socio-cognitive process and social meaning can readily be accommodated into the framework. It seems, therefore, that in contrast to the generative approaches outlined above, the basic assumptions of the

Cognitive Linguistics movement are fundamentally compatible with a description of sociolinguistic variation. How does this work in practice?

3.2 APPLICATION TO VARIABLE DATA. If Cognitive Sociolinguistics it is to become a serious contribution to both sociolinguistics and Cognitive Linguistics, it must be validated by the successful application of the theory to a corpus of 'real' data collected from 'real' speakers. My corpus (86,000 words) was collected from a group of 16 adolescents (12 males and 4 females) who play together in a juvenile pipe band in Fife.¹¹ The data were collected over the course of a year using the ethnographic technique of long-term participant observation.

One motivation for using ethnography as a method of data collection was that I was keen to avoid the types of style shift that are typical during an interview between strangers. For instance, Ellen Douglas-Cowie's (1978) work has shown that there is often a 'familiarity effect'—as the subjects become more familiar with the interviewer, they progressively shift to using more 'non-standard' variants. Although my corpus did avoid a familiarity effect (to the extent that this is possible), it contains many examples of style shifting that can be described as 'performance speech' (Schilling-Estes 1998; Preston 1992, 1996) such as (3), where the speaker, Lucy, is describing an event that has taken place in her Maths class and adopts the role of various actors in her performance of the event.

- (3) **L:** the day right, this guy came tae ma class late eh an he had a late slip an he wiz like, [teacher style] 'does it take ye ten minutes tae get here' cos he'd got his late slip but then em he'd came in at ten past an he got it on like on the o'clock. Right [laughs] an then he came in tae ma class an he wiz like, [teacher style] 'does it take ye ten minutes tae get tae this class' an he sat **doon**. I went, 'nah, he wiz **ootside** haen a fag' [laughs] an he went, 'shurup' like this an a'hing an he wiz total goin 'shut it man' like this an a wiz like, 'nae boer'. An then, an then Lauren went, 'aye he wiz haen a pash' like that cos in Dundee that's what they call a fag right cos a' the folk we met at the army they were goin, 'comin for a pash' cos it means 'comin for a fag' right.

LC: right ok

L: but he thought he said, 'he wiz goin for a pish' right [laughing]. An he went, [teacher style] 'Lauren. **Out!**' and she's goin, 'nu' a never meant it. A never even swore. What ye talking **aboot?**' an he's total goin [teacher style] '**Out!**' An she wiznae goin **oot**, she's sitting like this an then a wiz total pu'en her back an a wiznae letting her go an a wiz hodin on tae her like under like that an she's, she's trying tae get up an she's goin, 'it's Lucy, she's hodin on tae me' an am goin 'no am no' like this an a'hing. She-he's goin, em, an then Ashley's sitting goin, sittin shou-tin, 'a pash, a pash' like trying tae get sent **oot** tae eh, an a wiz like, 'a' right'. She's a total gimp. It wiz just so funny cos he thought she said pish an she didnae. She got sent **oot** total [laughs]... we iyewiz get sent **oot** me an her for talking.

Traditionally, sociolinguists have tended to dismiss performance speech because their focus has been on understanding unselfconscious 'natural' speech or 'the vernacular'. This was articulated explicitly in Labov's 'Vernacular Principle' (1972:112) which has led (variationist) sociolinguists to focus less on self-conscious speech because it is assumed that this will be more reflective of the language used in the speech community. However, Schilling-Estes (1998) has argued that valuable insights about language variation can be gained through investigating performance speech.

For instance, notice in example (3) the variation that affects words of the OUT lexical set (highlighted in bold in the text). This has two variants for these speakers: a high rounded monophthong (which is the typically 'Scots' pronunciation and is represented with a double *o* spelling) and a diphthong (the 'Standard' variant, represented with an *ou* spelling). In this example of performance speech, all instances of the monophthong variant occur when Lucy is imitating either her own speech or the speech of her peers and all instances of the diphthong variant occur when Lucy is imitating the speech style of her teacher.

For many of the speakers in this corpus, the use of the diphthong variant is considered to be the 'proper' or 'posh' form (see example 4) while the monophthong variant is characterised as 'Scottish' or 'slang' (see example 5).

(4) **LC:** so what aboot if ye were in a job interview?

S: aye you'd hae tae speak proper then cos you're wanting, ken you're no wanting tae go in an be like 'aye, how ye daen pal'

LC: how no?

S: cos yer wantin tae impress them eh. Ken you're no hink-no wantin them tae hink you've just crawled oot the gutter or nuhin

LC: give me an example eh how ye wid talk...would ye say 'hooose' or 'house'?

S and R: house

...

LC: what dae ye hink eh people that say 'house' instead eh hooose a' the time?

R: posh

(5) **LC:** is hooose slang?

S: aye

C: /nu' hooose is Scottish

S: is it?

C: aye cos a'bdy says hooose

LC: what aboot folk that say house?

C: they're proper

By examining performance speech such as in (3), it becomes clear how these variants can acquire such social meanings. The extract in (3) shows that this speaker has recognized a relationship of similarity between the diphthong variant of this variable and a particular instance of a social type: her maths teacher. In other words, performance speech shows that speakers are aware that certain linguistic variants are used by certain types of speakers in certain social situations or domains.

In Cognitive Grammar terms, speakers abstract over salient displays of style (such as dress, behavior and speech) and then use these as 'cognitive reference points' (Langacker 1999:173–202) or landmarks in cognition which can, with frequency of occurrence, become stored in long-term memory. Recall from section 3.1 that Cognitive Linguistic models assume a non-modular view of language and regard linguistic knowledge as part of a larger system of knowledge in cognition. This feature of the model therefore allows connections to be made in the mind between social *and* linguistic knowledge (such as the social type 'teacher' and the diphthong variant of this variable). The repeated co-activation and, hence, entrenchment of particular (social and linguistic) nodes and links in the cognitive network enables the individual to associate social knowledge with particular linguistic variants and for these variants, in turn, to take on social meaning.

For instance, if an individual hears the diphthong variant of the OUT variable for the first time used by a teacher, they will abstract a relationship between the linguistic variant and the social type 'teacher'. If the individual only ever experiences this diphthong variant through interaction with teachers, then this association will strengthen (become more entrenched) in their mind and the variant will become a marker of the social type 'teacher'. However, the individual may also experience the diphthong variant used by other social 'types' (as is the case for these informants). Individuals will then make generalisations over these social types, abstracting commonality between them. Naturally, as the number of social types increases, the commonality that is shared between them will broaden, leading to a more abstract social category such as 'posh' or 'proper'. By association with this social category (or schema), the linguistic variant then takes on the social meaning 'posh' or 'proper'.

The main benefit of invoking a Cognitive account of linguistic structure (over some of the generative approaches reviewed above) when dealing with sociolinguistic variation is therefore that Cognitive models of language structure do not discard social meaning as 'outside the grammar proper'; they can offer a more unified approach to variation by fully incorporating social meaning into the theoretical framework. This is important because it is exactly this task that is occupying many (third wave) sociolinguists—they are becoming increasingly interested in the relationship between linguistic variation and social meaning at the local level and are asking the question 'how do variables mean?' (Eckert 2002:4).

4. CONCLUSION. It has been my aim in this article to highlight the cross-over that exists between the disciplines of sociolinguistics and linguistic theory. In mainstream (generative) linguistic theory, this cross-over has caused problems for the asocial theories concerned, which were not initially designed to model variation. In Cognitive Linguistic theories of language, the cross-over is implied in the theoretical framework. However, it

is still largely unexplored and in the emerging cases in which it has been investigated, the emphasis has been primarily on the capability of the theoretical model to handle variation rather than on the application of the model to linguistic data. Although this article also provides a rather programmatic approach, I have suggested that examples of performance speech may provide a useful starting point for such research. Performance speech provides evidence of the relationship between social meaning and linguistic variation and Cognitive Linguistics offers a framework in which to analyse this relationship in the mind of the individual speaker.

- ¹ Earlier versions of this research were presented at the 16th Sociolinguistic Symposium, University of Limerick, 2006. I wish to thank Graeme Trousdale and Miriam Meyerhoff for their helpful comments on earlier drafts and presentations. I would also like to express my gratitude to my informants for welcoming me into their community and their lives and allowing me access to such rich and entertaining data. Finally, I must acknowledge the helpful comments of the anonymous reviewers.
- ² *Cours de linguistique générale* (*Course in general linguistics*) was published posthumously in 1916 from a collection of students' notes, based on a series of lectures that Saussure delivered at the University of Geneva between 1907 and 1911. When referencing his work, I will use the standard system of including two page numbers: The first is from the English translation by Baskin (Saussure 1960) and the second is from the French original, edited by de Mauro (Saussure 1973). E.g. in 'p. 21/40', 21 is the English page number and 40 is the French.
- ³ Although Saussure recognised that 'external' elements of language 'are concerned with important matters' (in which he includes knowledge of the relationships that exist between languages/dialects, various population movements, political and geographic factors and the development of literary languages) he sees no reason to suggest that any of these factors must be taken into account when studying the internal structure of language (p. 21/40).
- ⁴ This was later developed into a distinction between I-Language and E-Language (Chomsky 1986). I-Language is similar to the concept of competence in that it represents internal linguistic knowledge but E-Language encompasses even more than performance.
- ⁵ For a counter argument to the innateness hypotheses, see Tomasello (1995) and Sampson (1997).
- ⁶ For example, see Spolsky (1998:7–8).
- ⁷ Perhaps the first attempt to develop an existing theory of language structure towards the incorporation of variation in language use was the idea of 'variable rules' (hereafter VR), proposed initially by Weinreich *et al.* (1968) and then modified by Labov (1969, 1972:chapter 8) and Cedergren and Sankoff (1974). A more recent approach that draws on many of the same assumptions as VR is OT (see Evanini's contribution to this volume for an overview).
- ⁸ This approach rests on the 'common sense' assumption that languages such as 'English' exist as definable linguistic entities. The argument is therefore circular: The definition of parameters rests on the supposition of the existence of different languages which are defined as differences in parameter setting.
- ⁹ Adger and Smith (2005) notate uninterpretable features by prefixing them with a *u*.

- ¹⁰ A 'usage-based' approach is based on the idea that linguistic knowledge is largely composed of low-level schematic generalizations and that the schemas which do emerge 'spring from the soil of actual usage' (Langacker 2000:1) i.e. language is acquired on the basis of encounters with actually occurring expressions.
- ¹¹ These data form part of the corpus collected for Clark (2005). This was a pilot study that was conducted for an MSc dissertation with the intention of expanding the research into a larger PhD project.

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REQUIRED VARIABILITY IN INPUT

DOUGLAS W. COLEMAN

University of Toledo

IT HAS LONG BEEN ASSUMED that input for language learning consists of language. This seems so self-evident that any challenge is usually dismissed out of hand. However, the assumption is demonstrably false. Further, it underlies failures in the kind of input the language teaching profession provides to students. Supporting evidence for the latter comes from a wide range of foreign language textbooks, with particular attention to how those books use illustrations to support target language textual matter.

1. THE OVERWHELMING PRESENCE OF THE ASSUMPTION CANNOT BE DENIED.

Chomsky formalizes the assumption in stating that the input for the language learning device consists solely of 'the primary linguistic data', or '[i]n Saussurian terms... specimens of *parole*' (1964:26). This position has been reasserted many times over. Sharwood Smith explicitly says input for 'grammar construction' involves only 'linguistic' material (in which he explicitly includes only language) (1985:402, fn. 1). '[I]nput constitutes the language to which the learner is exposed' according to Ellis (1986:299). Chomsky's discussion of Universal Grammar (UG) shows he maintains the assumption twenty years after introducing it (1986:145–60). Morgan assumes not only that input consists of 'primary linguistic data', but argues that this input also contains bracketing information about hierarchical structures present in it (1986 *passim*). White equates 'input' with 'linguistic input', presenting a diagram virtually identical to Morgan's (1989). Saleemi (1992) presents a very brief overview of a number of variations within the Chomskyan paradigm, including work by Chomsky, Chomsky and Miller, Fodor, Pinker, and Wexler and Culicover. All share the assumption that the 'data' (1992:8) for language learning—although also referred to as 'the available evidence' (p. 3), or 'environmental input' (p. 10)—consists of language. As Saleemi puts it:

The evidence constitutes the input to the learner... The evidential data consist of a finite set of particular examples relating to the object of learning, such as a natural language. (1992:8)

Input is '*language data (utterances, texts) which the learner is exposed to*: that is, the learner's experience of *the target language in all its various manifestations*' to Sharwood Smith (1994:8). VanPatten (1996:6) cites White (1989), giving his version of the diagram that originated with Chomsky (1964:26). Input is 'limited exposure to *language*' (Gopnik 1997:3, emphasis added). Input is '[t]he target language that is made available to learners' (Nunan 1999:309). According to Gass and Selinker (2001:400), 'learners are exposed to a

body of second language data... known as input.' Chomsky (2000 *passim*) reiterates his claims about the so-called 'Poverty of Stimulus', which is couched in terms of the limited evidence purportedly available to learners in the form of 'well-formed sentences'. The above comprises but the barest set of examples; the assumption that input consists of language is still nearly universally-held in the field of second language acquisition (SLA).

2. THE INPUT = LANGUAGE ASSUMPTION IS FALSE. Klein's Chinese Room¹ thought experiment works like this: 'Suppose you were locked in a room and were continually exposed to the sound of Chinese coming from a loudspeaker; however long the experiment continued, you would not end up speaking Chinese...' It shows that '[w]hat makes learning possible is the information received *in parallel* to the linguistic input in the narrower sense (the sound waves [generated by speech])' (1986:44).

3. THE INPUT = LANGUAGE ASSUMPTION IS FALSE, NOT JUST 'A LITTLE BIT' FALSE. Some misread Klein's Chinese Room. 'Well *obviously*, yes,' they say, 'the input does not consist *only* of language, but *also* of all the other things that are going on in the learner's environment.' But we have to keep in mind that as 'mental' objects, the very existence of 'objects of language' (Saussure 1959:8) depends upon the viewpoint of the observer.² Thus, in order for learners to perceive language in input, they must have a certain viewpoint, i.e., they must *already* 'know the language'.

This has been used as a 'evidence' for Universal Grammar (UG) (Carroll 2001:9), but via an argument that ends up being circular: (1) input consists only of language ('the primary linguistic data'); (2) thus there is a 'Poverty of Stimulus'; (3) thus there must be an innate Universal Grammar; and by implication, (4) the initial assumption must be correct: Input consists only of language. In four simple steps, the existence of UG is (invalidly) justified and a false assumption (that there is language in the input) is defended.³

4. A LESS IMPOVERISHED VIEW OF INPUT IS NEEDED. In (Coleman 2006:169) I show that if Carroll's argument worked, the Chinese Room would succeed. It provides everything Chomsky's theory claims is needed. I have discussed the implications of the Chinese Room elsewhere (Coleman 2005, 2006); clearly, input must consist of something else: the totality of sensory input. We need to replace the demonstrably false 'mentalist' *input = language* assumption with a scientific theory, a theory of people learning to communicate in the real world. Learners receive a mass of sensory input; given the learner's concurrent state, a wide range of neural events occur as a consequence.⁴

5. WHAT ARE THE PROPERTIES OF EFFECTIVE INPUT? To recap: input is nearly universally regarded as *consisting of* language (or at least as *containing* language); the assumption is false: Input consists of a wide range of sensory experience, period. From this, we should expect that the quality of foreign language materials design and of classroom practice should suffer.

For individuals to learn new ways to communicate, input must *correlate* perceptions across sensory modalities. For example, an ESL teacher holds up a pen, points, and

momentarily gazes at it while saying, 'This is a pen'; he holds up a book, performing similar actions, saying, 'This is a book'. The teacher goes on to perform similar actions with several different objects, in doing so, establishing a correlation between the actions and saying 'This is'. The learner interprets the actions as bringing the object into salience to identify it, thus beginning to learn that saying 'This is' communicates an identification.

Effective input, however, must contain two kinds of variability. BREADTH-OF-ASSOCIATION variability exists when inputs show how broadly a certain communicative behavior applies. The teacher next points to a wooden straight chair and says, 'This is a chair.' A native Chinese speaker (NCS) might refer to that chair by saying 'yizi'. If the teacher does not later include an upholstered chair, repeating 'This is a chair', then the NCS will not understand that when the native English speaker (NES) says 'chair' he potentially refers to a broader range of objects in his environment than the NCS does when saying 'yizi'. (The upholstered chair is referred to by the NCS by saying 'shāfā', never 'yizi'.) Now, suppose that the teacher does provide the requisite BREADTH-OF-ASSOCIATION variability. The NCS might now associate someone saying 'chair' with the two ranges of objects he would refer to by saying 'yizi' and 'shāfā'. If this happens, then the NCS will also perform what native English speakers will perceive as reference errors: he will sooner or later refer to a sofa by saying 'chair'.

For the NCS to learn what the NES might refer to when saying 'chair', the input must also contain LIMITS-OF-ASSOCIATION variability to show where potential referents of 'chair' end and those of 'sofa' begin. For example, the teacher will need to point to a sofa and say, 'This is a sofa.'

The need for BREADTH-OF-ASSOCIATION and LIMITS-OF-ASSOCIATION variability is clear once we understand that input consists of the full range of sensory perception, *not language*.⁵ This need is not even *implicitly* recognized in popular, so-called 'input-based' approaches such as Terrell's (1977) Natural Approach, Asher's (1969) Total Physical Response Method, or VanPatten's (2004) Grammar Input Processing Approach.

In teaching a materials-writing course in a master's program in Teaching English as a Second Language (TESL), I have been faced over and over with a disappointing fact: When trying to select textbook examples to demonstrate effective use of illustrations, it is far easier to find wretched examples than even adequate ones. I will therefore focus here on the use of illustrations in foreign language textbook design. Examples from actual foreign-language textbooks will illustrate typical input problems resulting from failure to provide BREADTH-OF-ASSOCIATION and LIMITS-OF-ASSOCIATION variability.

6. THE SAMPLE. I initially surveyed 118 ESL and foreign language textbooks ($n_{\text{ESL}} = 41$, $n_{\text{FL}} = 77$). About 98% of the ESL texts were illustrated, compared to about 56% of the foreign language texts. I selected all 'integrated skills' texts in the library of my university's intensive English language institute and all of the foreign language texts at a public library branch as representative samples. The publication dates of texts in both categories (ESL and foreign language) ranged from the late 1960's up to the present. Only the first three illustrations in the main part of the text were considered. Variation contributing to breadth of association was present in fewer than 14%. Variation contributing to limits of association was present

in fewer than 13%. These counts included variation occurring across a sampled image and any other image, even one not within the sample. Some illustrative examples below are from other sources.

7. WHAT ARE THE PROPERTIES OF INPUT IN THE SAMPLE? In many, many cases, illustrations are mere window-dressing. For example, in Brunhoff (1963:1–2)—a children's French book—the famous character Babar, presented with no background scene, accompanies an entire page of text. On the first page of an ESL unit titled 'Money', Catcart and Strong (1983:1) show a woman at a bank counter bending over to pick up something (a small can?) off the floor. A unit in Robertson (1991: opposite page 1) on higher education has a photo: There is a tall building and two small figures, a man in a windbreaker seated on a bench reading, a woman walking by apparently carrying her jacket and some books, a purse over one shoulder. In Magnan *et al.* (1999:21), a full-color reproduction of the painting *La Rencontre (bonjour, Monsieur Courbet)* introduces the first unit, 'Rapports interpersonnels'. These are typical of much of the vaguely scene-setting use of visual material.

Sometimes, text and illustration are more obviously linked. Occasionally, the illustration represents a moment in time during a specific event and does so accurately. For example, in Miodunka and Wróbel (1986:39), there is an 11-line dialogue between Piotr and Janusz, two friends from school, and Piotr's mother. A line drawing shows two young men and one older woman, one of the young men shaking the woman's hand and bowing slightly. From this, if we can already read the text, we can conclude it illustrates the line 'Mamo, to mój kolega z roku, Janusz Nowak'. However, a learner has no way to know which part(s) of the text go with the illustration unless already able to read the dialogue.

Sometimes, text and image are mismatched, however, apparently simply from poor design. For example, in Brunhoff (1963:3), there is an illustration of Babar lying down in the shower. The text on the page consists of numerous lines such as '**I rub my arms.** *Je frotte mes bras*,' '**I rub my stomach.** *Je frotte mon ventre*,' 'And while I rub myself, **I sing.** *Je chante*,' '...and **I dry myself.** *Je me sèche*,' and so on. Unfortunately, the illustration does not in any way even suggest any of the specific actions described by the accompanying text. In such a case, the illustration represents none of the specific moments in time actually being described.

Sometimes, the mismatch is egregious. In Hertzfeld-Pipkin (1992), ironically titled *Getting the picture*, several illustrations contradict accompanying text. For example, a narrative on pp. 1–2 describes a two-step college registration process in a room and involves only two college employees, one at the door and one inside at a computer. With it is a photo of a large room with a long row of tables, a number of people behind them, and students forming many lines at the tables (no computer in evidence). In a dialogue in another unit, two people are in a restaurant discussing the menu and then are approached by a waitress. The accompanying photo shows two people *outside* a restaurant, looking at a menu posted near its entrance. Yet another unit contains a photo of a traffic accident and the statements of three witnesses, all of whom describe a car-truck accident. The photo here shows two cars. In such cases, by contradicting the text, the illustrations actually get in the way of learning.

A similar mismatch arises when a text tries to present a set of examples thought to be related, but illustrates only one. For example, Strutz (2003:11) presents a single illustration

to accompany the header line ‘___ is stolen. ___ **ist gestohlen.** *ist ge-SHTOHL-en*’ and a list of optional fillers, ‘My car **mein Wagen** *meyen VAAG-en*’, ‘My briefcase **meine Akten-tasche** *MEYEN-eh AHKT-en-tahsh-eh*’, and so on.⁶ How are learners to know which of several events described is the *one* event depicted? This requires the translation, the presence of which demotes the illustration to window-dressing.

Some textbook authors have clearly been influenced by approaches such as Terrell’s (1977) Natural Approach (NA) or Asher’s (1969) Total Physical Response (TPR). Most often, these authors present one label for one thing depicted (object / property / event). The illustrations in Emberley (1993) are typical in this regard. Bilingual labels in an illustration identify a bathroom ‘sink’ as ‘el lavabo’. Is a kitchen sink also a ‘lavabo’? The reader will probably learn (incorrectly) that it is. Another object is labeled both ‘hand towel’ and ‘toalla’. Is a bath towel also referred to as ‘toalla’? The learner cannot know.

Colors are always depicted via one-for-one examples—never with variation. Kershul (1998:15) is typical. Here the colors are shown as blobs of paint on an artist’s palette: ranged around the edge are ‘rot’, ‘orange’, ‘blau’, ‘gelb’, ‘grün’, ‘bunt’, ‘schwarz’, ‘braun’, ‘grau’, ‘weiß’, and ‘rosa’. The trouble is this: In English, a stainless steel drawer handle might be described as ‘silver’, but (unless painted non-metallic grey), never as ‘grey’. In Romanian, for example, the handle would be described in the same way whether brushed steel or painted grey. (A former graduate student of mine is Romanian and I asked her ‘What do you call this color in Romanian?’—about a grey object and a silvery one—the answers were the same.) So is the stainless steel handle ‘grau’ in German, or something else? A learner can’t know from the illustration in Kershul.

In one of the most highly-regarded picture-based learning aids, the Oxford Picture Dictionary (Shapiro & Adelson-Goldstein 1998) we often see similar problems. On a page titled ‘Cars and Trucks’, we see 17 vehicles, each with a single label. The vehicles are labeled ‘subcompact’, ‘compact’, ‘midsize car’, ‘full-size car’, ‘convertible’, ‘sports car’, etc. The labels do not make it clear that the subcompact, compact, and the convertible could each be referred to as a ‘car’, and even seems to suggest the reverse, since the ‘midsize car’, ‘full-size car’, and ‘sports car’ labels contain ‘car’. How could an ESL learner guess that saying ‘convertible car’ is odd but that saying ‘compact car’ is not? The one-label-for-one-image approach fails here too because it lacks breadth-of-association and limits-of-association information.

It must also be emphasized that breadth of association and limits of association are not context-independent. For example, hair we call ‘red’ is not the same color as a shirt we call ‘red’; a shirt the color red hair we would more likely call ‘orange’ or ‘rust-colored’ (object properties). The same person is called ‘the witness’ in court and ‘Bob’ in a bar (role part). One person might describe an object differently depending on his functional role in the situation: A stamp collector might refer to a stamp as ‘the red one’ when speaking to a postal clerk at the regular window (as an ordinary postal customer) but as ‘the vermilion one’ when speaking to the same clerk (at a different time) at the philatelic window (as a stamp collector).

Textbook illustrations characteristically ignore (or actually confound) such aspects of context as the properties of people and objects and their relationships to what is being communicated. In Silverstein *et al.* (1996:2), for example, we see an illustration of a family

at home. The adult male is labeled 'el padre', the adult female, 'la madre', the male and female children as 'el hermano' and 'la hermana', respectively. The labels 'el padre' and 'la madre' refer to the adults' relationship to the children (not their relationships to each other), yet the labels 'el hermano' and 'la hermana' refer to the children's relationships to each other (not to the adults). The illustration in no way helps the learner know whether the labels refer to an age property of the individuals (e.g., that 'el padre' refers to an adult man) or to their relationship to each other (e.g., that 'el padre' refers to a male spouse) or their relationship to the children (the actual intention). Compare this to the use of a family tree highlighting one individual and then expressing the relations of others to him in *German-English* (2005:22–23); in the latter case, these distinctions are clear, at least if the learner can understand the family tree diagram convention.

In the Food section of Shapiro and Adelson-Goldstein (1998:52), for example, we see a grocery display labeled 'MEAT' containing various cuts of beef, pork, and lamb. A separate display illustrated on the same page is labeled 'POULTRY'. This tells the learner that chicken is not referred to as 'meat', but as 'poultry'. The learner may be puzzled upon entering a grocery to find all these things in 'the meat department' and upon hearing a person refer to a piece of chicken or (or in some cases even fish) by saying 'meat', as when offering some at dinner by saying 'Would you like some meat?'

8. WHY DO THESE FAULTS OCCUR? Why is there an assumption that a one-for-one example is adequate? The obvious answer is that the authors assume *the input* really consists of language. But we know now that it does not. If it did, even one-for-one examples would be superfluous, because the input would contain phonemes and morphemes arranged in hierarchical structure and would carry its meaning with it. But we know this is not the case (Yngve 1996:1–13).

Why do textbook authors almost always ignore contextual factors such as the properties of people and objects in their various functional roles? This would seem to result from their focus on learning language as something which can (and *should*) be abstracted from learning how to communicate in *particular* real-world situations. In sum, authors themselves assume that pictures are there to clarify language (which they in turn assume is something there on the page).

9. WHAT DO THE MOST EFFECTIVE USES OF ILLUSTRATION LOOK LIKE? Even in the best cases, breadth of association and limits of association of reference are not consistently provided. Shapiro and Adelson-Goldstein (1998:26) do provide an illustration differentiating the scope of reference of the labels 'wake up' and 'get up' (i.e., limits-of-association information). They clearly differentiate, via sets of pictures, 'apartment building', 'house', and 'townhouse' (but in the process use a picture of *several* townhouses, labeled 'townhouse'). To show 'sit down / take a seat' (p. 2), in one image, the action is being performed in regard to a chair. If someone gets down onto the floor in an upright position on his buttocks, did he 'sit down'? (Yes.) Did he 'take a seat'? (Much less likely.) How could the learner know the answer to either?

	A STRAIGHT CHAIR	AN EASY CHAIR	A SOFA
English	chair		sofa
Polish	krzesło		kanapa
		fotel	
French	chaise	fauteuil	canapé
Chinese	yizi	shāfa	

Table 1. A few simple cases of scope of reference compared.

An illustration in Magnan *et al.* (1998:521) shows a cut-away view of a house, with various furnishings labeled, including one easy chair labeled ‘le fauteuil’ and a group of four chairs around a table labeled ‘les chaises’. This provides (implicit) limits-of-association information for the labels ‘fauteuil’ and ‘chaise’. However, the English-speaking learner has no way to know (in the absence of negative examples such as ‘Ce n’est pas une chaise’ under a picture of an easy chair) that the label ‘chaise’ could not also apply to the easy chair. Compare Underwood (1990:22, 32, 36) in which three separate illustrations (of a kitchen chair, an easy chair, and a high chair) provide breadth-of-association information for the label ‘krzesło’. Now, in Polish the easy chair could also be labeled ‘fotel’ (though it never is in Underwood), but the kitchen chair and high chair could not. In French neither could the dining room chair be labeled ‘fauteuil’ nor could the easy chair be labeled ‘chaise’. Such differences of referential scope from English to French to Polish, etc. are ubiquitous (Table 1), yet as we can see, it is not only the one-for-one-example illustrations which do not adequately deal with this fact.⁷

In Watson and Folliot (1980:8–9), we see a serious attempt to provide something like breadth-of-association information. A color drawing titled ‘Sur l’eau’ (‘on the water’) depicts a scene of a raised canal crossing a river, people by the water’s edge, in boats, etc. Around the edge are arrayed smaller drawings of individual objects, among these a pleasure boat (labeled ‘le bateau de plaisance’), a rowboat (‘le bateau à rames’), and a motor boat (‘le bateau à moteur’). Learners are given some breadth-of-association information about the label ‘bateau’. The English-speaking learner, however, will be at a loss when it comes to two other objects depicted: a barge (labeled ‘la péniche’) and a houseboat (‘la péniche d’habitation’). Is the barge also able to be labeled ‘bateau’? Suppose a person is on such a barge and steps backward, dangerously close to falling overboard. Would a French speaker ever warn the person that he is about to fall off of ‘le bateau’, or would it *have to be* ‘la péniche’? The learner has no way to know; breadth-of-association and limits-of-association information are barely present in the input.

In fact, in the majority of the 14% of images containing breadth of association, much of the breadth of association was in the form of things like ‘le’ in the labels ‘le bateau’, ‘le filet’, ‘le barrage’, ‘le canal’, etc. (Watson & Folliot, 1980:8–9) or like the ‘das’ in the labels ‘das Haar’, ‘das Auge’, ‘das Ohr’, ‘das Nassenloch’, and so on (*German-English* 2005:14).

To their credit, Magnan *et al.* (1999) have some excellent cases of limits-of-association information in input. For example, a page of illustrations (p. 33) labeled 'Identifier quelqu'un' depicts four different situations and contrasts what a person would say to identify someone in each case. In the first, a teacher is calling a student's name ('Jean-Michel?') and the response is 'C'est moi.' In the second, two people are passing a third, who is asleep; one asks, 'C'est André?' and is told, 'Oui, c'est lui.' In the third, a woman with her head cocked to one side asks, 'Marianne, c'est vous?' but is told, 'Ah no. C'est elle,' by a girl pointing at a third person. In the fourth, one boy is asking another, 'Et toi, tu t'appelles...?' and is told, 'Moi, je suis Albert Leroi.' The learner gets a chance to associate situational differences with differences in the concurrent text.

Wilks (1997) combines some breadth-of-association and limits-of-association information in a picture-book format. For example, we see side-by-side a picture of a woman approaching a child and gesturing to get his attention, saying 'Disculpe' and next to this one of a man bumping into a woman—knocking some groceries out of a bag she is carrying—and saying, 'Lo siento' (p. 5). Elsewhere we see a child approaching a woman to ask for directions; he begins by saying, 'Disculpe' (p. 8). On yet another page, a man is sitting in a restaurant; he gets the waitress' attention by saying, 'Disculpe' (p. 12).

(Harris 1980:39) makes an attempt to do something similar with 'both', 'neither', 'all' and 'none'. Four images are shown, with the captions 'Both of these men are strong. / Neither of them is weak' (two body builders), 'Both of these women are young. / Neither of them is old' (two young women), 'All of these bottles are empty. / None of them is full' (four empty bottles), 'All of these watches are expensive / None of them is cheap' (five watches with price tags). On the surface, these images look like they must be helpful to the learner. But what is being associated? 'Both' and 'neither' appear only with people and 'all' and 'none', only with inanimate objects. 'Both' and 'all' appear only with descriptions ('these men' / 'these women' / 'these bottles' / 'these watches') and 'neither' and 'none' appear only with 'them'. Clearly, the author and illustrator intend for both and neither to be associated with two of something and 'all' and 'none' to be associated with more than two. But intention does not override real-world causality in how learners will actually be affected.

Not all confounded associations will lead to failure, as the following example shows (Balme & Morwood 1987). On p. 72 we have four captioned illustrations: a man sitting in a Roman theater ('spectātor in theātrō sedet'), a group sitting in the theater ('spectātores in theātrō sedent'), a single person standing on the stage ('āctor in scaenā stat'), and a group standing on the stage ('actores in scaenā stant'). Learners with no prior knowledge that would help them understand *spectātor*, *āctor*, and so on, could just as easily learn from these examples that *āctor* referred to a location or that *sedet* referred to a member of the audience. But of course, the English-speaking learner will have no problem seeing the intended association. In order to work, breadth-of-association and limits-of-association information need only be as complete as the ignorance of the learner.

I found one textbook, obviously based explicitly on Terrell's (1977) Natural Approach, which was the only one from the whole sample which was even fairly consistent in terms of providing breadth-of-association and limits-of-association information in input throughout the whole text. This was Dixon (1992). Correlating visual input with text, in fact,

seemed to be the key rationale behind its design (introductory material for every lesson 'usually consists of a series of questions and answers cued to pictures'). It begins (p. 2) with a series of captioned pictures: a young man with a book under his arm ('Michael is a student. / He is a student'), a young woman with a book under her arm ('Susan is a student. / She is a student'), a woman with her back to a blackboard, holding an open book ('Mrs. Jones is a teacher. / She is a teacher'), and so on. It proceeds to ask (p. 4), replicating the pictures used earlier, 'Is Michael a teacher or a student? / *He is a student.*' 'Is Susan a lawyer or a teacher?', etc. Later it goes on to ask (p. 9), using some of the same pictures, 'Is Mrs. Jones a teacher or a lawyer? *She is a teacher. She is not a lawyer.*' then, 'Is Susan a college student or a teacher?', etc. Note that so far, an 'off-camera' voice is relating these things to the learner via the pictures' captions.

From there, the text uses a similar technique to demonstrate how to refer to oneself vs. to people one is talking *to* vs. people one is talking *about*. Michael is shown (p. 10) gesturing at himself and looking at the reader while saying, 'I am a student.' Next, he is shown gesturing at Susan and looking at her while saying 'You are a student.' Michael and Susan are shown gesturing to themselves and looking at the reader while saying, 'We are students.' On the next page, no one we can see is speaking to the reader; the captions represent the earlier 'off-camera' voice. We see (p. 11) a woman beside a hospital bed and the caption 'Miss Lopez is a nurse. / She is a nurse.' Now the whole point of this lesson seems to be to *show* 'I', 'you', 'he', 'she', etc. Yet on p. 12 we start to see a breakdown. The text returns to a question-and-answer format. One picture shows Miss Lopez again, looking down at her patient, with the caption (the 'off-camera' voice) asking the reader, 'Is Miss Lopez a salesclerk or a nurse?' The *next* picture shows a woman at a desk, looking down at a typewriter, and bears a caption that reads, 'Am I a doctor or a typist? (You)'—apparently it is Miss Lopez talking and the learner is the typewriter. By p. 12, where the characters are looking and how they are gesturing has become totally detached from how they refer and are referred to. Also on p. 12, an identical picture of Michael and Susan appears twice (the one in which they are looking directly at us and gesturing at themselves): one time it appears with 'Are you students? (we)'; the other time, it appears with 'Are Susan and Michael college students?' This author clearly intends to use the pictures to *show* what the text means, yet *even here* we eventually see a breakdown of breadth-of-association and limits-of-association information in the input.

10. CONCLUDING REMARKS. Dixon, like the other authors, apparently, assumes the input for the learner really consists of *language*. Dixon describes what is presented by the text as 'structures and vocabulary' (1992:v). He mentions that in addition to 'structural material—verb tenses, possessive forms, and on on' that the text also presents cultural material: 'telling time, days of the week, months of the year, and so on' (*ibid.*). But the focus is clearly on *presenting structures and vocabulary*, i.e., language. Even the author of this text, which is like a picture-book version of a series of Natural Approach lessons, sees language '*cued* to pictures'.

We know now that this is not an adequate way of looking at what we are trying to accomplish, because in thinking of it this way we will not consistently provide for the

formation of associations across the totality of sensory input. Both breadth-of-association and limits-of-association information must be present in sensory input. It must be recognized—in the way input is designed—that contextual factors such as the properties of people and objects in their various functional roles affect how people communicate via speech. And finally, the conventional focus on learning a *language* as something which can (and should) be abstracted from learning how to communicate in particular real-world situations must be put aside.

- ¹ Klein's Chinese Room appears to have been inspired by Searle's (1980:*passim*) famous thought experiment which he uses to argue that a computer program cannot have human understanding. However, Klein's Chinese Room involves a significantly different scenario and has a very different purpose.
- ² Yngve has shown beyond a doubt that the 'objects of language' do not have any existence apart from their perception by an observer. Saussure recognized this explicitly (1959:8), as did Bloomfield, albeit implicitly, in his 'fundamental assumption of linguistics' (1933:78), as have a number of even more recent writers in the field—Itkonen (1978), to take just one example. Chomsky (1968 *passim*) defends 'mentalism' in *Language and mind* and makes a lengthy argument for a shift in focus from 'E-language' to 'I-language' (Chomsky 1986:24–46). In both cases he clearly accepts that the 'objects of language' are 'mental' objects, and even argues that linguistics should focus on them rather than on *mere* 'behavior' or 'E-language'. He seems never to have revised this view.
- ³ The claim that there is a 'Poverty of Stimulus' (see, e.g., Chomsky 1986:xxv–xxix, 51–56, 145–46) is based on the 'unlearnability' proof originally presented by Gold (1967). In fact, it is by *assuming* that input is the 'primary linguistic data' that Chomsky *creates* this purported 'Poverty of Stimulus'. If we drop that assumption, the 'Poverty of Stimulus' disappears and the whole argument for UG falls apart.
- ⁴ I say 'combined with the learner's prior (especially neural) state' to head off red herring arguments such as White's (1989:16) assertion that the alternative to 'the solution offered by generative grammar' is that the child comes 'to the acquisition task equipped *solely* [emphasis mine] with an ability to extract generalizations from input data.' In saying 'solely', White implies it is an all-or-nothing proposition—that is to say, UG or a *tabula rasa*. Chomsky is less reserved when he similarly asserts (1986:17):

To deny these assumptions [about UG] would be bizarre indeed: It would be to claim either that language can be learned *only* under conditions of diversity and conflicting evidence, which is absurd, or that... [UG] exists... but the actual earning of language does not involve this capacity. (1986:17, emphasis added)

Like White's, Chomsky's argument sets up a false dichotomy of choice. For example, what about the possibility that people can learn 'under conditions of diversity and conflicting evidence' (not *only* under such conditions)?

- ⁵ We then correctly regard 'undergeneralization' and 'overgeneralization' as properties of the input, not of the learner or the learning process, which is how we usually—and *invalidly*—view them.

- ⁶ I am not at all sure what we are to make of the fact that in this particular illustration there is a policeman in the background, turned away from both thief and victim.
- ⁷ While I have been corrected by at least one native speakers of Polish who has said that *krzesło* refers only to straight chairs and that an easy chair must be *fotel*, my own experience in Poland suggests that this may be an appeal to 'correctness' or could simply reflect individual variation. In fact, Poles who spoke to me in Polish would sometimes refer to an easy chair by saying *krzesło*, even if they knew I could say *fotel*; further, Underwood (1990:32) chooses to label a picture of an upholstered 'side chair' with arms as 'krzesło', not 'fotel'. Text-only dictionaries, such as Stanisławski's (1964, 1969) *Wielki Słownik*, are uninformative on such issues, as they do not clearly specify scope of reference. Thus, I decided to check the web for native-speaker sources (furniture stores, in particular). In March 2007, I found a number of cases like the following, which seem to confirm that for quite a few Polish native speakers, 'krzesło' is, like 'chair', inclusive of at least some things also labeled 'fotel'. On the website of Ovo Stylowe Meble (<http://www.stylowemeble.com.pl>), I found an object labeled 'Krzesło-fotel Skórzany' (an armless wooden chair with leather-padded seat and back). A type of office chair labeled 'krzesło obrotowe' on the IKEA Poland website (<http://www.ikea.com/pl>), was almost identical in appearance (shape, arms, wheels, padding, etc.) to one labeled 'biurowy fotel' on the Allegro shopping website (<http://regional.allegro.pl>).

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VARIABILITY IN TRUBETZKOY'S CLASSIFICATION OF PHONOLOGICAL OPPOSITIONS

B. ELAN DRESHER
University of Toronto

[A] phonemic system presupposes a system of oppositions... But *opposition* is not exclusively a phonological concept, it is a logical one, and the role it plays in phonology is strongly reminiscent of its role in psychology. It is impossible to study phonological oppositions (of which phonemes are only the terms) without analyzing the concept of the opposition from the point of view of psychology and logic.
(Trubetzkoy 2001[1936]:15)

THE PHONOLOGIST WHO DID THE MOST to establish contrast as an organizing principle of phonology was N. S. Trubetzkoy. One of his key insights is that the determination of contrastive features in an inventory is not self-evident, but must be established by the analyst on the basis of the patterning of the phonological system (the 'system of oppositions'). He showed that phonological systems with similar-looking inventories could have very different contrastive structures.

This is one sense in which Trubetzkoy's classification of oppositions allows for *variability*: the contrastive features of a given set of phonemes are not determined by their phonetics, but may vary depending on phonological patterning.

There is a second, less desirable, sense in which Trubetzkoy's classification of phonological oppositions can be said to admit of variability. I will argue that Trubetzkoy's account of contrastive relations in *Grundzüge der Phonologie* (1939) is crucially incomplete, and admits of ambiguity as to what he really intended. I will show that when we make explicit what he omitted, we find that he was operating with two incompatible approaches to determining contrastive features. I will also propose that one of these methods is deficient, while the other one represents a genuine insight into the patterning of phonological systems.¹

1. OPPOSITIONS AND PHONEMIC CONTENT. Every phoneme of a language enters into an *opposition* with every other phoneme. It is important to bear in mind that an opposition is a relation between a *pair* of phonemes.

Another important notion is that of *phonemic content*: 'By phonemic content we understand all phonologically distinctive properties of a phoneme, that is, those properties which are common to all variants of a phoneme and which distinguish it from all other phonemes of the same language, especially from those that are most closely related' (Trubetzkoy 1969:66). According to Trubetzkoy, phonemic content is closely tied up with the system of oppositions: 'The definition of the content of a phoneme depends on what position this phoneme takes in the given phonemic system, that is, in final analysis, with which

Feature	Marked	Unmarked
[obstruent]	obstruents	sonorants
[nasal]	nasals	liquids
[lateral]	laterals	rhotics

Table 1. *Markedness of features of German /r/.*

p	pf	t	ts	k
b		d		g
	f		s	ʃ
	v		z	x
				h
m	n			ŋ
	l			r

Figure 1. *German consonantal phonemes.*

other phonemes it is in opposition... Each phoneme has a definable phonemic content only because the system of distinctive oppositions shows a definite order or structure' (67–68).

The above remarks suggest that the phonemic content of a phoneme, that is, the set of its distinctive (contrastive) properties, ought to *derive* from its position in the system of distinctive oppositions. Therefore, we need a way to determine a phoneme's position in the system of oppositions *before* we have determined its distinctive properties. But Trubetzkoy does not explicitly show us how to do this.

Consider, for example, his comments on the German phoneme *r*. Trubetzkoy (1969:67) observes that the phonemic content of German *r* is 'very poor, actually purely negative: it is not a vowel, not a specific obstruent, not a nasal, nor an *l*'. How did Trubetzkoy arrive at this conclusion? First, he is assuming a theory of *markedness* wherein one value of a feature is *marked* (positive) and the other is *unmarked* (negative). Based on his remarks, he assumes the markedness values in **Table 1**; the feature names are not Trubetzkoy's, but I have chosen them so that the marked value is the positive (+) one.

Markedness is one ingredient we require to reconstruct Trubetzkoy's analysis, but we need to answer a further question: how did he pick these particular features, and only these, to distinctively characterize German *r*? One way we can arrive at this result is by successively dividing up the inventory by features following the order given in **Table 1**. Consider the consonantal inventory of German; the phonemes shown in **Figure 1** are those listed by Trubetzkoy, and the layout of the chart is based on his remarks.

We can distinguish /r/ from every other phoneme by this procedure:

1. First, divide the inventory by the feature [obstruent], which distinguishes between obstruents and sonorants (lightly shaded box in the chart). Since *r* is a sonorant, this feature distinguishes it from all obstruents, which no longer need be considered with respect to uniquely characterizing *r*.
2. Among the sonorants the feature [nasal] eliminates the nasals (inner box), leaving *r* in contrast only with *l*.

3. The final feature, [lateral], distinguishes between *l* (circled) and *r*, and leaves them both with a unique set of features.

The above procedure meets the requirement that the phonemic content of a phoneme, that is, the set of its distinctive (contrastive) properties, follows from its position in the system of distinctive oppositions. Moreover, in this procedure, 'the system of distinctive oppositions shows a definite order or structure.' The order in question is the order of the features, which gives structure to the inventory. But Trubetzkoy does not explicitly follow this procedure in *Grundzüge*. Some of his other examples do not appear to work the same way.

2. BILATERAL AND MULTILATERAL OPPOSITIONS. Trubetzkoy (1969:68) classifies oppositions in terms of their 'basis of comparison', those properties that the opposition members share: whether the shared properties are unique to those two members or not. '[I]n the case of *bilateral* oppositions... the sum of the properties common to both opposition members, is common to these two opposition members alone... The basis of comparison of a *multilateral* opposition, on the other hand, is not limited exclusively to the two respective opposition members.'

A question immediately arises: In comparing the opposition members, do we consider *all* their properties, or only their *distinctive* properties? Trubetzkoy's initial answer is decisive: 'Of course, only the phonologically distinctive properties are to be considered' (68). But, he goes on, 'some nondistinctive properties may be taken into consideration if, on the basis of these properties, the members of the opposition in question are placed in opposition with other phonemes of the same system.' This is not entirely clear to me, but Trubetzkoy gives an example, this time from French: '[T]he opposition *d-n* (as in French) is to be considered bilateral because its members are the only voiced dental occlusives. Yet neither voicing nor occlusion is distinctive for *n*, as neither voiceless nor spirantal *n* occur as independent phonemes' (69).

This statement makes us doubt a number of principles that we posited on the basis of the German example. First, Trubetzkoy here understands a feature to be distinctive in a phoneme *only if* there is another phoneme in the language that is identical with respect to *all* its properties except for that feature. This notion of how to arrive at distinctive features is different from the procedure we used above, using a series of ordered features.

If we used that procedure here, we could, for example, order the feature [voiced] first, distinguishing between voiced (shaded) and voiceless consonants, as shown in **Figure 2a** (overleaf).

Since both *d* and *n* are voiced, following this division we would only have to subsequently distinguish among the voiced consonants. Continuing to use Trubetzkoy's terms, the next feature could be [occlusive], which we apply (shaded boxes in **Table 2b**, overleaf) to the set of voiced consonants (we are not concerned with voiceless consonants, which are no longer relevant to distinguishing *n* within the inventory). Finally, the feature [dental] (vertical box in **Table 2b**) narrows the set to just *d* and *n*.

Note that under this procedure the features for voicing and occlusion *are* distinctive for *n*; in fact, together with [dental], they are the *only* distinctive features so far assigned to *n*.

p	t	k
b	d	g
f	s	ʃ
v	z	ʒ
m	n	ɲ
	l	
		j

b	d	g
v	z	ʒ
m	n	ɲ
	l	r
		j

Figure 2a. French consonantal phonemes (left). **2b.** Voiced consonantal phonemes (right).

But this conclusion contradicts Trubetzkoy's statement that 'neither voicing nor occlusion is distinctive for *n*, as neither voiceless nor spirantal *n* occur as independent phonemes.' How, then, did he arrive at this result?

The above statement suggests a different method for arriving at distinctive features, which we can describe as follows: Pick a phoneme and compare it with every other phoneme in turn. Any feature that is required to distinguish a pair is distinctive for the phoneme in question.

Let us apply this procedure to French *n*. We observe the following contrasts:

1. *n-m* are distinguished by [dental] (or another place feature).
2. *n-d* are distinguished by [nasal].
3. These two features suffice to distinguish *n* from every other segment as well, regardless of any other distinctions that may exist.

From this procedure it indeed follows that 'neither voicing nor occlusion is distinctive for *n*, as neither voiceless nor spirantal *n* occur as independent phonemes.'

3. TWO APPROACHES TO FINDING DISTINCTIVE FEATURES. We have now discovered two methods of assigning distinctive features to phonemes; these methods give different results:

1. Feature ordering
 - a. Put the available features in an order.²
 - b. Divide the inventory on the basis of the first unused feature.
 - c. Go to the next feature on the list and repeat (b) in each subinventory until all phonemes have been distinguished.
 - d. For each phoneme, designate as contrastive those features that were assigned to it in the course of this procedure.
2. Pairwise comparisons
 - a. Compare every phoneme with every other phoneme in turn.
 - b. For each pair, designate as contrastive a feature that distinguishes them.

p	t	c	k	
b	d	ʃ	g	
	ts	tš		
f	s	š	x	
v	z	ž		ɦ
m	n	ɲ		
	r	ř		
	l			
		j		

Figure 3. Czech consonantal phonemes: ɦ in a separate laryngeal series.³

It is not clear which of these, if any, Trubetzkoy had in mind. The example with German *r* works well with the first method; but this method fails to give the result Trubetzkoy arrived at for French *n*. For this case we require the second method. So let's see if the second method also gives us Trubetzkoy's analysis of German *r*.

Recall that Trubetzkoy assigns German *r* the distinctive (negative) features nonlateral, nonnasal, and nonobstruent. We have seen that *l-r* are distinguished by the feature [lateral]. But except for this pair, the pairwise method yields unclear results. What feature distinguishes *r* from *ɲ*, for example? It could be [nasal], as in Trubetzkoy's analysis; but it could also be an occlusion feature (nasals are stops, in contrast to *r*), or a place feature. Similarly, *r* may be distinguished from *z* by [obstruent], as in Trubetzkoy's analysis, but this is not the only feature that distinguishes these phonemes; other candidates are [strident], or place of articulation. Such choices arise with respect to almost every opposition.

There are two problems with supposing that the pairwise comparison method is the method Trubetzkoy had in mind. First, as we have just seen, pairwise comparisons do not always yield a clear result. In comparing two phonemes that differ by *more* than a single feature (the majority of oppositions), we don't know which feature is the contrastive one and which are redundant.

There is a second major problem with attributing the pairwise comparisons method to Trubetzkoy. For though some of his examples, like the case of French *n*, do seem to assume pairwise comparisons, or something like them, many more examples in *Grundzüge* are totally incompatible with this method.

Consider, for example, his treatment of German and Czech *h*. According to Trubetzkoy (1969:69), German *h* does not take part in any bilateral oppositions. In particular, it is not in a bilateral opposition with *x*: *h* is laryngeal and *x* is dorsal, and so there is no set of features that the two share exclusively. Looking at the Czech consonant inventory in **Figure 3**, one might suppose that Czech *h* (more properly, *ɦ*) is similarly isolated.

However, Trubetzkoy (1969:124) proposes that it forms a bilateral opposition with *x*. His reason is that the distinction between these phonemes can be neutralized, for they behave phonologically like a voiced-voiceless pair, like the other such pairs in Czech. 'The *h* in Czech thus does not belong to a special laryngeal series, which does not even exist in that language. It belongs to the guttural series, for which, from the standpoint of the Czech

p	t	c	k
b	d	ʃ	g
	ts	tš	
f	s	š	x
v	z	ž	ħ
m	n	ɲ	
	r	ř	
	l		
		j	

Figure 4. Czech consonantal phonemes: h part of the guttural series.

phonological system, only the fact that lips and tip of tongue do not participate is relevant.' That is, we should diagram the Czech consonants as in **Figure 4** rather than as in **Figure 3**.

While I think that Trubetzkoy is entirely correct in making this distinction between German *h* and Czech *ħ*, the difference in their contrastive status does not emerge from pairwise comparisons of the phonetic properties of these phonemes with other phonemes in the system. Rather, it is the *phonological behaviour* of these phonemes that is the key to the analysis of their phonological content. Whereas pairwise comparison tells us nothing about the difference between the German *h*-*x* opposition and the Czech *ħ*-*x* opposition, we can use feature ordering to implement Trubetzkoy's analysis and capture this distinction. In German, if the feature [laryngeal] is ordered relatively high in the list, it will distinguish *h* from every other consonant, including *x*; therefore, *h* participates in no bilateral oppositions. In Czech, [laryngeal] would be lower in the order; instead, a feature [guttural] (perhaps characterized negatively as [noncoronal] and [nonlabial]) and the voicing feature are ordered higher. As there are no distinctive place differences between *ħ* and *x*, their opposition is bilateral.

As Trubetzkoy (2001: 20) remarked in his 1936 article addressed to psychologists and philosophers, the correct classification of an opposition 'depends on one's point of view'; but 'it is neither subjective nor arbitrary, for the point of view is implied by the system.' Feature ordering is a way to incorporate 'point of view' into the procedure of determining contrastive properties. Different orders result in different contrastive features, as is the case with German *h* and Czech *ħ*.

4. CONTRAST VIA FEATURE ORDERING. Though he did not follow this approach consistently, there are places in *Grundzüge* where Trubetzkoy explicitly recognizes the feature ordering principle. In his discussion of the Polabian vowel system, Trubetzkoy (1969:102–3) explicitly refers to a hierarchy of contrasts: a 'certain hierarchy existed' whereby the back ~ front contrast is higher than the rounded ~ unrounded one, the latter being a subclassification of the front vowels. Trubetzkoy's analysis suggests that the features are ordered into the (partial) hierarchy: [low] > [back] > [rounded]; under this analysis, the vowel system is as in **Figure 5**.

	[-back]		[+back]
	[-rounded]	[+rounded]	
[-low]	i ê e	ï ö	u o a
[+low]	ɑ		

Figure 5. Polabian vowel system: [low] > [back] > [rounded].

	Labial	Apical	Sibilant	Dorsal
voiceless stops	p	t	ts	k
voiceless fricatives	f	θ	s	x
voiced fricatives	v	ð	z	ɣ

Figure 6. Greek: major place, voicing, occlusion > minor place.

Trubetzkoy's rationale for this analysis is that in Polabian, palatalization in consonants is neutralized before all front vowels and before 'the maximally open vowel *a* which stood outside the classes of timbre.' Our analysis in **Figure 5** captures the notion that *a* 'stood outside the classes of timbre' by ordering [low] before [back]: thus, *a* has no contrastive value for front/back or unrounded/rounded. Trubetzkoy cites, as further evidence, the fact that the oppositions between back and front vowels are constant, but those between rounded and unrounded vowels of the same height are neutralizable after *v* and *j* to the unrounded vowels *i* and *ê*. Because [back] is ordered ahead of [rounded], 'the properties of lip participation were phonologically irrelevant for the back vowels.' That is, they have no contrastive value for [rounded].

It is possible to adduce many more examples from *Grundzüge* where feature ordering, though not referred to explicitly, allows us to capture Trubetzkoy's analysis in a systematic way. I will conclude with Trubetzkoy's discussion of the different types of oppositions that bilabial and labiodental consonants enter into in Greek and French. As with German and Czech *x* and *h*, the question to be answered is: are bilabials and labiodentals to be classified as a single contrastive place of articulation, or two?

In Greek, labials and apicals differ in both place and occlusion, so the major contrast could be based on either of these properties. Trubetzkoy appeals to 'parallel' relations between stops and fricatives at different places. In the sibilant and dorsal series, /ts s z/ and /k x ɣ/, respectively, the contrast is unambiguously one of stop versus fricative, since stops and fricatives occur at exactly the same place of articulation. By parallelism, Trubetzkoy proposes that the same contrast should apply to the ambiguous cases, which leads to the conclusion that the minor place splits are phonologically irrelevant. The Greek consonant contrasts can thus be represented as in **Figure 6**.

In French, however, Trubetzkoy (1969:126) argues for a split labial series. 'For in the entire French consonant system there is not a single phoneme pair in which the relation spirant : occlusive would occur in its pure form.' Trubetzkoy argues that place should take

	Bilabial	Labiodental	Dental	Alveolar	Prepalatal	Dorsovelar
voiceless	p	f	t	s	ʃ	k
voiced	b	v	d	z	ʒ	g

Figure 7. French obstruents (based on Martinet 1964:65).

priority over occlusion in this type of case. As Trubetzkoy does not give a chart, I adapt the one in **Figure 7** from Martinet (1964), whose analysis is clearly influenced by Trubetzkoy.

We can express the above analyses formally if Greek and French have different orderings of the occlusion feature, which we can call [continuant], relative to the minor place features that distinguish bilabial from labiodental place:

Variable feature ordering

- French: minor place features > [continuant]
- Greek: [continuant] > minor place

Moreover, Trubetzkoy's discussion of these cases suggests a principle that guides the choice of ordering: Place features take scope over occlusion (French) *unless* an occlusion contrast is needed anyway (principle of parallelism, Greek).

5. CONCLUSION. I have argued that Trubetzkoy, despite his many contributions to our understanding of how contrasts work in a phonological system, did not explicitly work out a procedure for determining which features of a phoneme are contrastive and which are redundant.⁴ When we try to deduce what he had in mind from the particular analyses presented in *Grundzüge*, we find that his results sometimes appear to presuppose a procedure involving pairwise comparisons of phonemes. I have tried to show that this method is not an adequate way to determine contrastive features (see further Dresher 2002). Hence, I conclude that Trubetzkoy's analysis of these cases, such as French *n*, is incorrect. The feature ordering approach to determining contrastive specifications, however, is more promising (Dresher 2003a, b, Dresher & Zhang 2005), and is the method that can be reconstructed as underlying many of Trubetzkoy's most interesting analyses.⁵

This approach was later taken up by Jakobson, Halle and Fant (1952). Jakobson and Halle (1956) argued for it under the name 'dichotomous scale.' This theory disappeared from phonology in the early 1960s, but has recently been revived in the project on *Markedness and the Contrastive Hierarchy in Phonology* at the University of Toronto: www.chass.utoronto.ca/~contrast/ (Dresher & Rice 2002; see also Hall 2007 for a recent synthesis).

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- ² The particular order is crucial, because different orders can yield different contrastive features. The procedure in 1a does not specify what the order is, or how to discover it. This is a job for the analyst and the learner.
- ³ Trubetzkoy does not provide an explicit account of the Czech phoneme inventory; **Figure 3** and **Figure 4** are based on Hall 2007:38. There are other differences between the German and Czech arrangements that illustrate the same point as that shown by *h*. For example, Trubetzkoy (1969:125) proposes that the German bilabials *p*, *b*, and *m* form a series distinct from the labiodentals *v*, *f*, and *pf*; he makes no such claim for Czech, where the labial consonants presumably make up a single series, what Trubetzkoy considers the usual situation. See further the discussion of Greek and French labial consonants below.
- ⁴ Thanks to William Sullivan for reminding me that Trubetzkoy died before he was able to complete his book. This fact may account for some of the inconsistencies noted here.
- ⁵ A reviewer asks if there will always be one correct feature order for a given language, and whether phonemes can be cross-classified for particular features, rather than these features applying in a strict order. These are interesting questions that can only be answered by research into phonological systems. The question of whether phonology admits of unique solutions is an old one that arises in many different theoretical frameworks (cf. Chao 1934).

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VERBAL COMPLEMENT VARIABILITY AFTER THE PREPOSITION *TO*

PATRICK J. DUFFLEY
Université Laval

THIS PAPER WILL DEAL with a question that concerns syntactic variation within English constructions made up of Verb + *to* + Verbal Complement. In a generative approach to syntax, the main verb would be said to 'select' the type of complement with which it can be construed (cf. Hyde 2000:45). In the case of (1) and (2) below, this would correspond to a stipulation in the grammar according to which the verb *confess* selects *to* + *-ing*, while *agree* selects both *to* + *-ing* and *to* + infinitive:

- (1) a. Sven confessed to stealing the ring.
b. *Sven confessed to steal the ring.
- (2) a. Sven agreed to stealing the ring.
b. Sven agreed to steal the ring.

While selection rules of this sort highlight the existence of variation with some verbs, as opposed to the invariability of the complement form with others, at bottom they amount merely to a reformulation of the observational data. Consequently, they leave unanswered the fundamental scientific question of the cause of the variability or invariability of verbal complementation after certain verbs. This paper will attempt to address that question. The approach taken will be resolutely semantic, and it will correspond to what could be called meaning-driven grammar. Rather than using abstract positions in syntactic trees, meaning-driven grammar attempts to account for the syntactic properties of constructions in terms of the meanings of their components and the semantic relations between them.

But first let us return to the constructions illustrated in (1) and (2) in order to make some observations on the overall semantics of the two structures. A first observation concerns a difference in control readings between (2)a and (2)b: While sentence (2)b can only mean that Sven was the one supposed to steal the ring, in (2)a it could be the case that someone else was to do the actual pocketing of the coveted object, with Sven having given his approval to the plan. The two possibilities of interpretation of the *to* + *-ing* structure can be illustrated by (3) and (4):

- (3) In the autumn there was to be a break in his usual routine. He had agreed to taking on a reading tour in Scotland. Someone from the publicity department of his publishers had set it up (BNC A00 406).

- (4) Kathryn said that there were more and more occasions when management wanted the union to agree to not advertising posts externally. (BNC KA5 53)

Turning now to (1)a, one notes that only a subject control interpretation seems possible, whereby Sven is the agent of both the confession and the theft.

The data described above concerning control is problematic even for a purportedly semantic approach to this question such as Jackendoff and Culicover 2003. These authors claim that semantic roles allow a reliable identification of the controller, while syntactic position does not. By formalizing the lexical content of the main verb in terms of conceptual structure (i.e. thematic roles), they claim to be able to explain much of control directly from the lexical decomposition of the matrix verb. Thus they can account for the existence of unique subject control with the verb *intend* by the logic of intention, according to which 'someone who holds an intention is necessarily identical with the individual who executes the intended action' (2003:537). This explanation would readily apply to the verb *confess*: Someone who makes a confession is necessarily identical with the individual who executed the action which is confessed to. It would also seem to apply to the verb *agree*: The variability of control could be attributed to the fact that someone who performs an act of agreeing can do so either with respect to an action which they are willing to execute themselves or with respect to a plan of action to be executed by someone else. This does not cover all the data, however. It fails to account for the fact that no variability is observed with infinitival constructions, which manifest unique subject control in all cases attested to date.

What this shows is the need for a semantics that works not only with the natural logic associated with the lexical content of the main verb, but also with the meaning-content attached to all of the linguistic forms involved in the construction. Thus while Jackendoff and Culicover are right about the fact that control is not determined by syntactic position but rather by semantics, they propose no definition of the meaning of *to*, the meaning of the infinitive, or the meaning of the gerund-participle. It is to these elements that we must now turn our attention.

Based on a broad range of data, it will be proposed here that the basic meaning of the preposition *to* is that of kinetic progression potentially leading to a point (cf. Duffley & Fisher 2005:36, Duffley 2006:26–27). This notion is so general that it can be construed in a wide variety of domains. Applied to space, it produces the commonplace impression of a movement from one point to another. When complemented by an infinitive, its domain of application is generally that of time, and the most frequent sense effect is that of futurization, as is observable in (2)b. It can also be construed in the mental domain however, as in (5):

- (5) The spoon appears to be crooked.

In this sentence, appearances are construed as providing the basis for a mental connecting of the spoon to the state of being crooked.

The semantics of the bare infinitive can be defined as corresponding to a more abstract version of the simple form of the verb, as indicated by the identity of linguistic sign. As such, it evokes an event as a holistic actualization, construing the stretch of time corresponding to

the latter as containing all of what is involved in its lexical content (cf. Duffley 2006:28–30). In the case of an action, this involves the complete duration required to situate all of its distinct phases in time:

- (6) He did *wash* the car!

In the case of a state, the bare infinitive may evoke any of the moments of the state's existence as containing all of what is involved in the state:

- (7) He does *have* pneumonia!

This 'full instantiation' (cf. Langacker 1987:250–52) of the event denoted by the bare infinitive is of course ungrounded either by tense or by person (Duffley 2006:30).

As for the gerund-participle, while its semantic content is often defined as an exponent of progressive aspectuality (cf. Hamawand 2002:64), this definition will not be adopted here as it does not correspond to uses such as (1)a in which the event is clearly understood to be completely accomplished at the point in time denoted by the main verb. The hypothesis put forward here is based on the concept of schematicity elaborated by Langacker (2000:2) and proposes that all of the *-ing*'s uses are instantiations of the highly abstract schema of the interiority of an event. In the progressive construction, the actualizer of the event is situated at a particular moment within the latter's interiority, as in (8):

- (8) He was washing the car when I arrived.

However, the event's interiority can also be construed as a whole homogenous entity, which gives rise to a representation very similar to a verbal noun. This indeed is the construal found in (1)a and (2)a above, in which *stealing the ring* could be replaced by *the theft of the ring*.

The pieces are now all in place for an understanding of what is going on in the constructions illustrated in (1) and (2). In the uses which involve the *to* + gerund-participle construction, the preposition *to* evokes a movement of mental connection associating the act of confession or agreement with the act of stealing. The semantic configuration is therefore equivalent to that with a noun as object of the preposition *to*, except for the partly verbal character of the *-ing* form. Within this semantic configuration, the crucial factor for the determination of control is the lexical meaning of the main verb. The connection of a confession by an individual *x* to an act of stealing will imply that the individual in question is the perpetrator of the culpable deed. On the other hand, the connection of an act of agreement to an act of stealing will leave open the question of whether the agreeer is a prospective thief or is simply assenting to a plan which is to be executed by someone else.

The use of the infinitive as object of *to* changes the scenario significantly. Instead of being construed merely as a movement of mental connection, *to* is now represented as a path potentially leading to the integral actualization of the infinitive's event. The act of agreement is consequently construed as placing the agreeer on a path which could lead him

to perform the action of stealing. This meaning-configuration will always imply that the subject of *agree* is the controller of the infinitive's event.

It remains now to explain why the *to* + infinitive construction does not work with the verb *confess*. The observations just made already put us on the right track for proposing an explanation of this fact. It is obvious that the notion of confessing cannot be construed as something which puts the person making the confession on a path potentially leading to the actualization of the action of stealing. In order to make a confession of larceny, the theft must already have been committed. One sees here the influence on the interpretation of *to* of its being complemented by the gerund-participle rather than by the infinitive, and the consequent compatibility of the *to* + non-finite-form verbal complement with certain main verbs and not with others. When *to*'s complement is a bare infinitive, the meaning of *to* is construed as a path to actualization, and this type of construal is not semantically compatible with the verb *confess*. However, if *to* is construed simply as the connection created between a penitent and his crime by the act of confession, as is the case with an *-ing* complement, there is no incompatibility with this verb. Higher-order conceptual relations such as the thematic roles implied by the matrix verb's lexical meaning do play some part in determining such compatibilities: It has been shown here how they account for the variability of control readings with the *to* + *-ing* construction after the verbs *agree* and *confess*. Without an understanding of the semantic content of the components of the complement structure itself, however, it is impossible to have a clear view of how the complement interacts with the matrix. Hopefully, this paper represents a modest contribution towards that goal.

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HOW TO FORMALIZE VARIATION: STOCHASTIC OT MODELS AND /S/ DELETION IN SPANISH

KEELAN EVANINI
University of Pennsylvania

THE EXISTENCE OF VARIABILITY,¹ i.e. when multiple surface forms correspond to a single underlying representation, is a significant problem for many formal theories of phonology, which are often treated as strictly deterministic. Many theorists simply regard the different surface forms as *free variants* and use *optional rules* to formalize the variation (see Chomsky & Halle 1968). Others argue that the choice of surface variants is a performance phenomenon, and has no place in a model of grammatical competence (e.g., Bickerton 1971).

However, following Labov's early work (e.g., his 1969 article on the copula in AAVE) which demonstrated that the choice of surface variants is conditioned in a consistent and probabilistic manner by several factors, most variationist sociolinguists have assumed *inherent variability* in the grammar. That is, a speaker's grammatical competence contains knowledge of all of the surface variants, as well as knowledge of how frequently they occur. While variationists working under this paradigm do not always attempt to formalize their empirical findings, when they do, the model they use most commonly is the *variable rule* (see Labov 1969 and Cedergren & Sankoff 1974 for early formulations).

The locus of variation in a speaker's grammar has remained a contentious issue to the present day (see, for example, the exchange between Newmeyer 2003 and Bybee 2005). Recently, however, many phonologists, especially those working within the framework of Optimality Theory (OT), have begun to explore ways in which to extend their formal models to account for variation. Some of the formalisms that have been proposed are Partially Ordered Grammars (Anttila 1997), Floating Constraints (Reynolds 1994, Nagy & Reynolds 1997), Constraint Competition (Zubritskaya 1997), and Stochastic OT (Boersma 1997, Boersma & Hayes 2001). Anttila (2002 and in press) provide good general overviews of these various formalisms and how they relate to each other. Significantly, all of them assume that at least some knowledge of variation is located in a speaker's grammatical competence, and thus they depart from more traditional phonological formalisms that have attributed variation solely to performance. In this regard, they come closer to the model of inherent variability espoused by many variationists. However, they are still limited in that they usually focus only on providing a model that generates the raw output frequencies of the surface variants and cannot adequately account for all of the factors that condition the variation.

In this paper, I apply the formal model of variation that has received the most attention in recent years, namely Stochastic OT, to the phenomenon of /s/ deletion in Spanish, one of the most widely studied sociolinguistic variables. I show how this formalism is not adequate to provide a complete model of the phenomenon, and propose changes to it that enable it to take into account the empirical findings from variationist studies. Finally, I

constraint	description of constraint	violated by
*s] _σ	no syllable-final /s/ ²	[k ^h asas]
MAX	every input segment has a corresponding output segment	[kasa]
ID-PLACE	the place of articulation of an output segment is identical to the place of articulation of the corresponding input segment	[k ^h asah]
ID-MANNER	the manner of articulation of an output segment is identical to the manner of articulation of the corresponding input segment	[kasan] (non-occurring)

Table 1. Constraints necessary for a grammar of /s/ deletion in Spanish.³

compare this modified Stochastic OT formalism with the variable rule model, and demonstrate that the two are functionally equivalent. This finding represents an advance for both phonological and sociolinguistic theory, and should lead to greater collaboration between the two fields.

1. /S/ DELETION IN SPANISH. /s/ deletion in Spanish is one of the most widely studied sociolinguistic variables, and has been documented for several dialects, including Puerto Rican (Ma & Herasimchuck 1971, Poplack 1980), Panamanian (Cedergren 1973), Colombian (Lafford 1982), and Chilean (Cid-Hazard 2003). The facts that so many quantitative analyses of /s/ deletion have been carried out and that they have consistently shown the same conditioning factors to have significant effects on the choice of variants, indicate that it is an ideal variable for testing the formal phonological models listed in the introduction.

The general phonological pattern is that /s/ undergoes a process of lenition in syllable coda position, resulting either in aspiration (change to [h]) or in deletion.⁴ In this paper I will refer to the general process as /s/ deletion, whether the final result is aspiration or deletion. /s/ deletion can occur either when the underlying /s/ is contained within the root or when it is an inflectional affix. For example, /mismo/ *mismo* ‘same’ can surface as [mismo], [mihmo], or [mimo], and /kasa+s/ *casas* ‘houses’ can surface as [k^hasas], [k^hasah], or [kasa]. **Table 1** describes the OT constraints that are necessary to produce these three surface variants.

The markedness constraint *s]_σ militates against having [s] in the coda position of a syllable, while the three faithfulness constraints prevent changes from being made to the underlying form. In a strictly deterministic OT grammar, the constraints in **Table 1** would have a fixed ranking, so there could only be a single output form for the input /k^hasas/. In order to produce the three occurring output forms—[k^hasas], [k^hasah], and [kasa]—three separate grammars would be needed. In the next section I describe how a stochastic OT grammar can account for this type of variation within a single grammar.

2. VARIATION IN A STOCHASTIC OT MODEL. Stochastic OT models are one way to reconcile the need for a deterministic constraint ranking during speech production with the

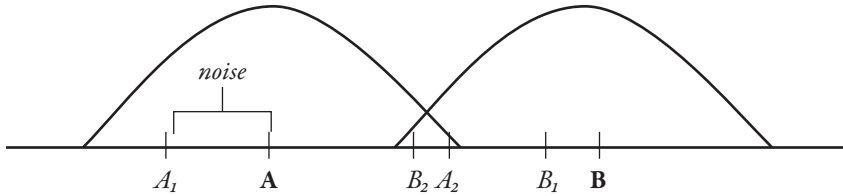


Figure 1. Illustration of two constraints in a stochastic OT grammar.

variation inherent to natural language (see Boersma & Hayes 2001:47–50 and Anttila 2002:231–33 for overviews of the formalism). In these models, each constraint has a numerical ranking whose value does not change after the grammar has been acquired, i.e., around the critical age.⁵ This is called the constraint's *ranking value*. The moment when the linguistic form is processed immediately before being uttered is the *evaluation time*. At the evaluation time for every form, a stochastic element is introduced and combined with every constraint's ranking value to produce the actual value used to rank the constraint for that utterance. This value is called the *selection point*.

For any given ranking value, the process of calculating the selection point at evaluation time simply involves adding the random noise to the ranking value. This equation is provided in (1):

$$(1) \quad \text{selectionPoint}_i = \text{rankingValue}_i + \text{noise}$$

The noise value is defined to have a Gaussian distribution, whose standard deviation is conventionally stipulated to be 2. This value is arbitrary, and the choice does not affect evaluation, as long as the standard deviation is the same for all constraints. This is because the ranking values themselves are arbitrary (Boersma & Hayes 2001:49). Variation in the output forms arises when the ranges for two constraints overlap, and the two different rankings cause two different forms to be optimal.

Figure 1 provides a graphical representation of this process. Two constraints are shown, with the ranking values given in bold, **A** and **B**. Most of the time, the selection point for constraint **A** will be higher than that for constraint **B**; however, variation can occur, as shown by the selection points A_2 and B_2 .

For example, a simplified analysis of Spanish /s/ deletion with only the two output forms [kasas] and [kasa] corresponding to the input /kasas/ would have the two constraints $*s]_\sigma$ and MAX. A hypothetical example of a Spanish dialect in which deletion occurs more often than retention would assign the constraints ranking values that are relatively close to each other, e.g., 100 for $*s]_\sigma$ and 99 for MAX. **Table 2** (overleaf) shows a Praat (Boersma & Weenick 2006) implementation of ten evaluation times for these ranking values along with the resulting selection points for each constraint.

The optimal output forms for each evaluation time are shown in the bottom row of **Table 2**. In these 10 evaluation times, this simulated speaker would have produced [kasas] three times (trials 1, 5, and 10) and [kasa] seven times.

eval. time	1	2	3	4	5	6	7	8	9	10
MAX	100.4	98.3	99.6	96.5	101.8	98.6	98.2	98.8	97.3	101.0
*s] _σ	100.3	99.5	100.9	101.4	100.8	99.1	104.0	100.1	99.1	98.5
output	kasas	kasa	kasa	kasa	kasas	kasa	kasa	kasa	kasa	kasas

Table 2. 10 sample stochastic evaluations for simplified /s/ deletion.

variant	%
[s]	11
[h]	41
[Ø]	48

Table 3. Syllable final /s/ in Panamanian Spanish.

22,167 IO pairs; 0.1 plasticity; [kasas] 11%, [kasah 41]%, [kasa] 48%	
constraint	ranking value
ID-MANNER	105.14
*s] _σ	99.71
ID-PLACE	98.03
MAX	97.12

Table 4. Constraint ranking values for total output frequencies, no stylistic information.

The variation modeled in **Table 2** is due to the fact that the ranking values of the constraints are within one standard deviation of each other. On the other hand, in order to model a speaker who does not exhibit variation, the ranking values for the two constraints would have to be several standard deviations apart. Then, variation would be extremely unlikely, and the ranking of the two constraints would be effectively categorical.

3. A STOCHASTIC OT GRAMMAR OF /S/ DELETION.

3.1. STOCHASTIC GRAMMAR FOR TOTAL OUTPUT FREQUENCIES ONLY. Cedergren (1973) reports the results of a sociolinguistic survey of Spanish in Panama City. Her corpus contains 22,167 tokens of syllable final /s/, and **Table 3** shows the distribution of the three variants: [s], [h], and [Ø].

The GLA (Gradual Learning Algorithm) is an algorithm for learning the ranking values of constraints in a stochastic OT grammar (see Boersma 1997, Boersma & Hayes 2001:51–54 for details). It simulates the process of grammar acquisition for a language learner exposed to variable surface data. **Table 4** presents the results of a GLA simulation with 22,167 input-output pairs with the frequencies from Cedergren’s study (all constraints were given an initial ranking of 100).

These ranking values illustrate how the GLA acquires rankings to produce both categorical and non-categorical data. First of all, ID-MANNER is ranked nearly three standard

/kasas/	ID-MANNER	*s] _σ	ID-PLACE	MAX
selection point	101.49	100.42	96.36	95.28
kasas		*!		
kasah			*!	
ES kasa				*
kasan	*!			

Table 5. Sample evaluation time of the stochastic grammar in **Table 4**.

style	[s]	[h]	[Ø]
casual	20	35	45
careful	28	39	33
reading	66	17	16
word list	87	5	8

Table 6. Stylistic constraints on /s/ deletion in Columbian Spanish.

deviations higher than the next highest constraint. This means that a speaker with this grammar would produce [kasan] rarely enough to make this form indistinguishable from a speech error (Boersma 1997:45). Thus, this is effectively a categorical ranking.

On the other hand, the constraints *s]_σ and MAX are both within one standard deviation of ID-PLACE. This means that the output forms [kasas], [kasah], and [kasa] will all be optimal at different evaluation times with a relatively high frequency. **Table 5** illustrates a sample evaluation time with [kasa] as the optimal output.

The grammar described in **Table 4** is an adequate formal model of a speaker's competence for the total variable output of /kasas/.⁶ A speaker with that grammar will produce [kasas] 11%, [kasah] 41%, and [kasa] 48% of the time. However, this takes into account only the raw output frequencies and ignores of the other factors that condition the variable output.

3.2. A STOCHASTIC GRAMMAR WITH STYLISTIC CONSTRAINTS INCLUDED. The stochastic grammar for /s/ deletion in Spanish as presented in **Table 4** is inadequate, since it cannot account for all of the factors that variationist studies have shown to have a significant effect on the choice of surface forms. For example, more formal styles have been shown to inhibit deletion of /s/, whereas more casual styles promote deletion. **Table 6** presents style-shifting data for /s/ deletion from a study of Colombian Spanish (Lafford 1982, cited in Morris 1998:7).

In order to model these stylistic constraints using the current stochastic OT formalism, it would be necessary to posit separate ranking values for each style. These ranking values, produced using the GLA and the process described in Section 3.1, are included in **Tables 9–12** in the Appendix. However, this model forces us to posit that the speaker actually has four distinct grammars, each of which is evaluated stochastically. This situation combines a

Factor Group	strongly promotes /s/ deletion	mildly promotes /s/ deletion	inhibits /s/ deletion
POS	adjective	noun	determiner
grammatical status of /s/	monomorphemic	plural -/s/ suffix	2nd Sg. -/s/ suffix
following segment	consonant	vowel	pause

Table 7. Internal grammatical factor groups affecting /s/ deletion.

stochastic model with a model similar to the Multiple Grammars Theory (e.g., as described in Anttila in press:3–7).

In order to preserve a model in which all surface variants are processed as part of the same grammar, Boersma and Hayes suggest a modification to the equation used at the evaluation time that unifies the stochastic procedure for determining ranking values with style shifting information. This solution is shown in equation (2):

$$(2) \quad \textit{selectionPoint}_i = \textit{rankingValue}_i + \textit{styleSensitivity}_i \times \textit{Style} + \textit{noise}$$

(Boersma & Hayes 2001:83)

This equation adds the terms *styleSensitivity*_{*i*} and *Style* to equation (1). *Style* is a variable whose value is determined by the style of the utterance; its values range from 0 (maximally casual speech) to 1 (maximally formal speech). Each constraint then has a specific *styleSensitivity* value, based on the effect of style on the constraint. For example, *styleSensitivity* has a positive value for *s]_σ (producing a higher ranking in formal speech), a negative value for MAX (producing a higher ranking in casual speech), and a value of zero for ID–MANNER (since this constraint is not sensitive to style shifting). These two new terms in the equation used at evaluation time thus alter the selection point for each constraint appropriately for any given style.

With this extension to the stochastic OT grammar formalism, it is now possible to provide a model for a grammar that produces variable output that is also sensitive to stylistic constraints. However, this model is still cannot account for all of the factors that condition the appearance of the surface variants.

3.3. STOCHASTIC GRAMMAR INCLUDING ALL CONDITIONING FACTORS. Apart from the external stylistic factors that condition the variation of /s/ deletion, variationist studies have also shown that many internal grammatical factors have significant effects on the choice of which surface variant to use. The three factor groups that Cedergren (1973) found to be significant for /s/ deletion in Spanish are part of speech (hereafter POS) of the word containing the /s/, grammatical status of the /s/, and following segment. Their effects are listed in **Table 7**.

Cedergren (1973:15) formalized her model of a speaker’s competence that includes all of the conditioning factors discussed so far using a variable rule, and this has continued to be the preferred model among variationists. In order for a stochastic OT model to do the same, the formalism presented in Section 3.2 for stylistic conditioning would have to be

extended to also include the internal conditioning factors in **Table 7**. This would involve introducing a constraint-specific weight for each of the relevant factors and modifying the equation for a constraint's selection point at the evaluation time as was done in equation (2) to account for stylistic conditioning.⁷ Equation (3) presents these modifications (new terms are in bold):

$$(3) \quad \textit{selectionPoint}_i = \textit{rankingValue}_i + \textit{styleSensitivity}_i \times \textit{Style} + \textbf{\textit{posSensitivity}_i \times \textit{POS} + \textit{gramSensitivity}_i \times \textit{Gram} + \textit{follsegSensitivity}_i \times \textit{FollSeg} + \textit{noise}}$$

Analogous to the variable *Style*, the variables *POS*, *Gram*, and *FollSeg* would have values that range from 0 to 1, depending on the effect of each factor in the given utterance. For example, in the phrase *las casas bonitas*, the variable *POS* would have a value close to 0 for the evaluation time of the word *las* (since determiners inhibit /s/ deletion), a moderate value for the noun *casas*, and a value close to 1 for the adjective *bonitas*. The values *posSensitivity*, *gramSensitivity*, and *follsegSensitivity* would be distinct for each constraint, and would indicate how sensitive each constraint is to the effects of the various factor groups. The selection point for each constraint at the evaluation time would then simply be the combination of the (fixed) ranking value with all of the additional values determined by the grammatical and stylistic context. Of course, the stochastic noise value would also be added as usual, so the *POS*, *Gram*, and *FollSeg* effects would end up being non-categorical, which is the desired result.

A complete stochastic OT grammar would then consist of ranking values for all of the constraints along with sensitivity values for all of the significant factor groups. This grammar would be an improvement over all previous stochastic OT grammar models, since it would actually account for all of the causes of variable data.

4. COMPARISON TO VARIABLE RULE MODELS. The extensions to the stochastic OT formalism introduced in Section 3.3 now enable it to account for the internal and external conditioning factors that variationists have usually modeled with variable rules. However, the resulting equation in (3) looks strikingly similar to a variable rule. Equation (4) presents the standard logit-additive model of a variable rule (Sankoff 1988):

$$(4) \quad \log(p/1-p) = p_0 + \beta_a + \dots + \beta_n$$

In this equation, p_0 represents the input probability for the rule's application. It is an invariant likelihood and is analogous to constraint's fixed ranking value in Stochastic OT. $\beta_a + \dots + \beta_n$ represent the effects of the conditioning factors and are identical to the effects produced by adding the constraint-specific sensitivity weights in equation (3). Finally, $\log(p/1-p)$ is the probability that the rule will apply for a given utterance, and is similar to a constraint's selection point for a given evaluation time. **Table 8** (overleaf) summarizes these commonalities between the stochastic OT model in (3) and the variable rule model in (4).

While the two models are similar, they are not exactly the same. First of all, the stochastic OT model in equation (3) deals with *constraints*, whereas the variable rule model in

Stochastic OT	Variable Rules	Common Characteristic
ranking value	input probability (p_0)	the invariant likelihood that a rule will apply / (markedness) constraint will rank higher than the faithfulness constraints
selection point	$\log(p/1-p)$	the probability for any given utterance that a rule will apply / (markedness) constraint will rank higher
constraint sensitivity weights	factor effects ($\beta_a + \dots + \beta_n$)	the added effect of all of the factors conditioning variation

Table 8. *Commonalities between Variable Rules and Stochastic OT Models.*

(4) deals with rules. However, this is simply a difference in the form of the model, not the function. In effect, saying ‘rule X applies’ and ‘markedness constraint X outranks faithfulness constraint Y’ are identical in that they cause the surface form to deviate in the same way from the underlying form. When equation (3) is used to calculate the selection points for all relevant constraints at evaluation time, the result will be the same as if applying a variable rule.

Secondly, the two models differ in how they introduce a stochastic element to account for variation among the surface forms. The stochastic OT model assumes a Gaussian distribution for the noise value that is added to the ranking value and factor effects to produce the selection point, whereas the variable rule model assumes a logistic distribution of error. Again, however, this is not a substantial difference. The differences between models using a Gaussian distribution and those using a logistic distribution of error are usually insignificant. In fact, Paolillo asserts that ‘for many data sets the two models are equally applicable, and represent an approximate linear scaling of one another’ (2002:187).

Thus, when the current stochastic OT model as proposed by Boersma and Hayes (2001) is extended as in (3) to account for all factors that condition variation, the model it provides of a speaker’s linguistic competence does not differ substantively from the variable rule model used by many sociolinguists.

5. CONCLUSION. The finding that stochastic OT and variable rule models are equivalent ways of representing a speaker’s knowledge of surface variants and of the factors that condition their variation should help bridge the gap between formal phonologists and sociolinguistics. On the one hand, phonologists now have a way to model the internal and external factors that sociolinguistic studies have shown to be significant, and they no longer need to dismiss them as free variants. On the other hand, variationists now have a way of relating their empirical findings to the framework of formal phonology. It can be hoped that further research along these lines will lead to more future collaboration between the two groups.

¹ I would like to thank Eugene Buckley and an anonymous reviewer for comments on earlier drafts of this paper.

- ² A more general constraint against syllable-final consonants, $*C]_{\sigma}$, would not adequately describe the data, since it cannot differentiate between [kasas] and [kasah]. Also, other syllable-final consonants in Spanish do not exhibit the same kind of deletion, so it is clear that a more specific constraint is required. Morris' solution (1998:224) to use the constraint $*C_{[+strident]}]_{\sigma}$ is equivalent, since /s/ is the only [+strident] consonant that can occur in syllable-final position.
- ³ Note that additional constraints are also needed to prevent other sub-optimal strategies for avoiding a violation of $*s]_{\sigma}$. For example, DEP is needed to exclude an output form with epenthesis, such as [kasasa].
- ⁴ In some dialects (mostly Andalusian), deletion is accompanied by gemination of the following consonant, as in [mimmo]. This variant will not be considered in this study.
- ⁵ In order to accommodate linguistic changes that occur across a speaker's lifespan it is possible to supply a non-zero *plasticity* value to a constraint for an adult speaker (Boersma & Hayes 2001:52).
- ⁶ The *formal* nature of this model should be stressed here. The stochastic OT formalism in itself does not make any claims about processing speed or the psycholinguistic plausibility of the model. Indeed, many aspects of the model have been criticized by psycholinguists, such as the infinite generating power of GEN.
- ⁷ An alternative solution would be to 'explode' the constraints, and have a separate constraint for each environment in each factor group. Thus, in order to account for the POS effects, $*s]_{\sigma}$ would become three constraints ranked as follows: $*s]_{\sigma (ADJ)} \gg *s]_{\sigma (NOUN)} \gg *s]_{\sigma (DET)}$. This solution, however, is undesirable, because not all constraints would adhere to accepted markedness theories, and it would require the addition of many language-specific constraints.

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APPENDIX

Tables 9–12 represent the ranking values generated by the Gradual Learning Algorithm for the four constraints involved in the process of /s/ deletion using the stylistic data provided by Lafford (1982). Thus, these represent the four separate grammars that would be needed to produce the surface forms using the Stochastic OT model of Boersma and Hayes (2001). In Section 3.2, I propose an extension to their model that captures these effects within a single grammar.

22,167 IO pairs; 0.1 plasticity; [kasas] 20%, [kasah] 35%, [kasa] 45%	
constraint	ranking value
ID–MANNER	105.23
*s] _σ	99.18
ID– PLACE	98.19
MAX	97.40

Table 9. Constraint rankings for casual style.

22,167 IO pairs; 0.1 plasticity; [kasas] 28%, [kasah] 39%, [kasa] 33%	
constraint	ranking value
ID–MANNER	104.89
ID– PLACE	98.395
*s] _σ	98.359
MAX	98.355

Table 10. Constraint rankings for careful style.

22,167 IO pairs; 0.1 plasticity; [kasas] 66%, [kasah] 17%, [kasa] 16%	
constraint	ranking value
ID–MANNER	105.08
MAX	99.38
ID– PLACE	98.73
*s] _σ	96.81

Table 11. Constraint rankings for reading style.

22,167 IO pairs; 0.1 plasticity; [kasas] 87%, [kasah] 5%, [kasa] 8%	
constraint	ranking value
ID-MANNER	104.71
ID- PLACE	100.23
MAX	99.09
*s] _σ	95.98

Table 12. Constraint rankings for word list style.



THE VARIABILITY OF REFERRING EXPRESSIONS: AN ALTERNATIVE PERSPECTIVE ON THE NOUN PHRASE IN ENGLISH

LISE FONTAINE
Cardiff University

IT COULD BE ARGUED that there are basically two different views concerning language. The first is that language is often changing; there is variation in speakers' language from generation to generation, from region to region, and from context to context. This is seen as a social phenomenon, and often it is something that society has difficulty accepting (for example, lack of acceptance of certain linguistic varieties and the crisis over electronic language). On the other hand, work done in corpus linguistics and psycholinguistics on collocation and formulaic expressions seems to be saying something of the opposite; some parts of language do not change, they stay the same and this is something we can count on (for example, language learning/teaching, text categorisation, and register analysis).

The two different views are not necessarily conflicting. However, if both are true, then the problem is how to resolve them. How much variation is normal? The main interest of this paper is to better understand referring expressions in use. If we accept that individual speakers vary in the way they refer to the objects they want to talk about, then we need to know how much variation is normal or standard for a given speaker. If we also consider that speakers tend to express themselves habitually, with little variation in their use of expressions, then the question to answer would be how much variation, if any, there is among speakers and among text types.

Referring expressions have been studied from a variety of approaches. Philosophers have mostly been concerned with definite descriptions, truth values and existence (cf. Frege 1892). Semanticists look to identifying referents, assigning meaning to expressions. Psycholinguists are interested in how referring expressions are stored, expressed and recognized in the brain and the psychological involvement in the linguistic representation of referring expressions (cf. Cleland & Pickering 2003). Computational linguists have put the theories to the test and have tried to implement systems that are able to generate referring expressions in limited situations (cf. Reiter & Dale 1992). Corpus linguists (cf. Biber *et al.* 1998, Haan 1989, Quirk *et al.* 1985) have begun to look at noun phrase occurrences. Finally, referring expressions have also been studied in a relatively new area of research, formulaic language (cf. Wray 2002).

This paper is concerned with one particular aspect of referring expressions: their realisation in text in terms of their function and form within the framework of Systemic Functional Grammar (SFG). Section 1 discusses the relationship between referring expressions and the noun phrase. Section 2 describes the data under analysis, including a brief overview of the methodology. Then in section 3, the results of this study are presented. Finally section 4 concludes with a summary and some concluding remarks.

1. REFERRING EXPRESSIONS AND THE NOUN PHRASE.¹ Although the term referring expression has its roots in philosophical studies of reference and referring, it is most commonly used in psycholinguistic research and natural language processing. It is a primary concept, related to nearly every type of linguistic analysis from lexicography to discourse. However, linguists tend not to use this term and instead focus on its realization in structural units. Oddly this structural classification is also true for functional linguists, where one might expect to find a more functional approach.

This paper claims that the term needs to be brought to the forefront. We need a term 'for the linguistic units that serve to identify (or refer to) whatever we are talking about when we make a statement about something' (Lyons 1977:23), especially for those of us specifically interested in language from a functional perspective. The term used here is referring expression, to shift perspective from noun phrase to referring expression.

The noun phrase is such a common unit that very few researchers define it. It is a term that is often taken for granted and it is assumed that everyone knows what it is. The following definition is particularly interesting, as it presents the noun phrase as the point of departure, so to say, and suggests that a noun phrase can be used (by a speaker) to refer to an object.

A noun phrase is a string of words which syntactically is a constituent with an internal structure containing a determiner, a modifier and a head... Semantically, a noun phrase can be used as a referring expression. (Haan, 1989: 8)

Most research on referring expressions would suggest that it is in fact the other way around; that the noun phrase is simply one possible structural realization of a referring expression. The speaker's intention to refer to some object (i.e. to build a referring expression) would precede the building of a noun phrase.

An additional argument against seeing the noun phrase being used as a referring expression is that it is not certain that all languages have noun phrases, yet all language systems need to be able to let speakers refer to things (or objects, conceptual or physical). Field work done on the Iroquois languages, namely Cayuga, Tuscarora, and Mohawk, suggest that these languages do not in fact express referring expressions in the form of noun phrases. In Mohawk 'many entities are identified by means of morphological verbs rather than nouns' (Mithun 1996:636, cited in Rijkhoff 2002:13), as illustrated in the following example (*ibid.*):

- (1) rakwá:tihs wahratkátho? katéskrahs
 ra-kwá:tihs wa-hr-at-kátho-? ka-téskr-ahs
 he-is-young he-looked-at-it it-stinks
 'the boy looked at the goat'

Mithun's interpretation (1976:31, cited in Rijkhoff 2002:13) of what she calls descriptive labels is that they are all 'surface morphological verbs... (but) they clearly function in the same way as formal nouns syntactically'.

Text	N Words	N Referent*	N Thing**
GAE (email text – speaker 1)	4,824	1,692	1,510
HES (email text – speaker 2)	4,391	1,169	981
MFN (model forest network)	4,692	552	466
total:	13,907		

Table 1. Description of data. *Referent = all Participants and Circumstances (Subjects, Complements and Adjuncts). **Thing = all participants and circumstances realized as nominal groups (i.e. referring to some object).

It is perhaps unreasonable to assume that all languages have nouns and that all referring expressions are realized linguistically as noun phrases. This is clearly an extreme position. It is beyond the scope of this paper to explore this idea any further. It is sufficient evidence however to suggest that the structural realization of a referring expression is not a given. Nevertheless, it does seem clear that the correlation between a referring expression and its realization as a noun phrase is quite strong in English, although this is not always the case.

2. DATA AND METHODOLOGY. The data in this study comprises three small corpora. The first two (called GAE and HES) come from a large archive of personal email messages. The first, GAE, was then broken down over three time periods in order to analyse variation for a single speaker. Texts GAE and HES were selected because they were the only two from the archive to have the following text variables (Fontaine 2006):

- They were composed online using HTTP-based email software. This is important, as it gives less opportunity for editing as compared to POP-based email software.
- Both authors composed linear texts, i.e. their texts did not include any reported or embedded text from previous messages.

The third corpus (MFN) is from an educational brochure on the Model Forest Network. It was included as a control text so that comparisons could be made in several dimensions: texts written by one single speaker; texts written by different speakers within a similar text type (personal email texts); texts written by different speakers in different text types (personal email texts and another type of text).

As can be seen from **Table 1**, the three corpora are comparable with respect to word count, but there is a wide range of variation concerning the number of referents for the word count and especially those expressions realized as nominal groups. **Table 2** (overleaf) presents the relative ratios, and we can clearly see that the ratio between thing and referent is relatively constant across speakers and text types. There is a marked difference in these figures for the MFN text, but this is not surprising, as it was chosen for its differences. If differences are expected, then it will be interesting to see where similar patterns emerge.

This study approaches the nominal group in terms of its function as a Participant or a Circumstance in a situation (where a situation is realized as clause). **Figure 1** (overleaf) offers an example of this, illustrating the analysis of example (2) from the GAE corpus.

Text	Ratio		
	thing:referent	thing:words	referent:words
GAE (email text – speaker 1)	1:1.2	1:3.2	1:2.9
HES (email text – speaker 2)	1:1.9	1:4.5	1:3.8
MFN (model forest network)	1:1.9	1:10.1	1:8.5

Table 2. *Distribution of Referring Expressions in Text*

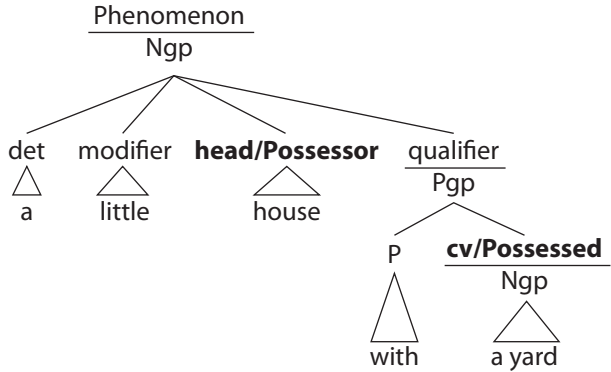


Figure 1. *Partial tree diagram showing analysis of referring expression realized as nominal group.*

(2) I want [a little house [with a yard]].

The referring expression is identified as a Participant or Circumstance, in this case a Participant in the role of Phenomenon (for more detail on the notation used in the tree diagram and the Cardiff grammar, see Fawcett 2000). It is filled by a nominal group with the following components: determiner – modifier – head – qualifier. The tree diagram is not complete; this is only a partial representation. The complex referring expression *a little house with a yard* was further analysed in terms of the functional relationship between the two referring expressions (*with a yard* is treated as an embedded referring expression).

Systemic Functional Linguistics considers language as a social activity whereby speakers make choices as they produce language. These choices are a reflection of the options available to the speaker. The options are semantic options, reflecting the function that the speaker wants his or her language to have. Then the meaning must be turned into form and realized through the grammar of the language. ‘The grammar of any language can be represented as a very large network of systems, an arrangement of options in simultaneous and hierarchical relationship’ (Halliday 1969:3).

Unfortunately space does not permit us to view the full system network for referent-thing as it is far too large. **Figure 2** offers a partial view, modelling the initial semantic options when entering the system. For a fuller discussion of this network, see Fawcett 1980.

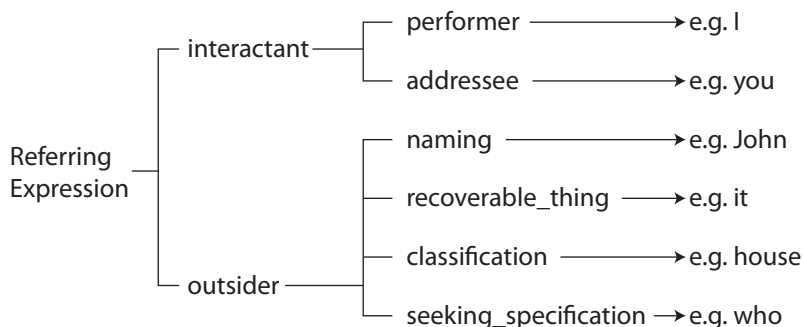


Figure 2. Partial view of the system network for referent thing (Fawcett 1980).

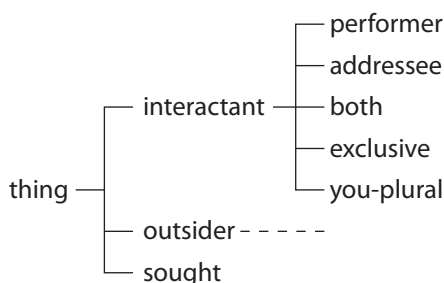


Figure 3. Partial view of the features coded for thing.

Converting the system network into an analytical methodology was challenging. Although direct modelling was impossible, every attempt was made to maintain a balance among the theoretical framework of analysis, the existing network for referring expressions, and the constraints imposed by the software. The analysis was completed using a theory-neutral computer assisted manual analysis, called the Systemic Coder (O'Donnell 1995, available online: <http://www.wagsoft.com/software.html>).

The input to the software is the text to be analysed (as unformatted text). The user determines the boundaries for the units under analysis by inserting markers into the text. In this study, boundaries were inserted around all Participants and Circumstances (for a full description of these terms and SFG, see Halliday 1994). The software then interprets these markers as boundaries and in Coding mode, the user is prompted to code the text with user-defined features.

The Coder enables the user to define the features to be coded by developing a scheme which represents the relationships among features through the use of system notation. The coding scheme developed is also far too large to represent here. As an illustration, **Figure 3** shows (using network notation) some of the features analyzed in the texts. The full set of coded features is not given here, again due to space limitations.

Text	'thing' Ngp	'event' Clause	'description' Qlgp
GAE	89%	3%	8%
HES	84%	5%	11%
MFN	84%	12%	4%

Table 3. Frequency of structural class realizing Referring Expression.

3. RESULTS. As stated above, the means of identifying a referring expression was to rely on the transitivity of the clause and to identify all Participants and Circumstances. Then these were categorized structurally (i.e. nominal groups, clauses and quality groups). In this section we consider the results from the three corpora in the following four areas: the structural realization of referring expressions, Interactant and Outsider reference, referring expressions in Subject role, and complex referring expressions.

3.1. THE FORM OF REFERRING EXPRESSIONS. The distribution frequency of the structural realization of referring expressions is presented in **Table 3**. It is clear that there is a very strong correlation between referring expressions and nominal groups in English, regardless of speaker or text type. There is no similar consistency with respect to the occurrence of clauses or quality groups, for which we find variation by speaker and text type. This variation is a reflection of speaker choice in referring and it is also a variable of Field of Discourse and Ideational meaning, i.e. the speaker's semantic choices in representing experience.

The following are examples of referring expressions labelled as 'thing', 'event' and 'description'² respectively:

- (3) A model forest is a place where the best sustainable forest management practices are developed, tested and shared across the country.
- (4) Surveying stream crossings and their condition determines which structures require upgrading or repair.
- (5) Aboriginal involvement is significant.

What should be noted in **Table 3** is that although there is statistically significant variation both between text types and speakers of the same text type for the distributions as events and descriptions, there is no significant variation for a single speaker.

As Biber *et al.* note, 'noun phrases are the major grammatical device used to refer to people, objects, or other entities in texts'. This tendency seems to hold. However, their work shows that 'texts from different registers often differ dramatically in the use of these referring expressions' (1998:108). One main area in which they consider these expressions to differ based on register is in their structural realization (or the lexical density of the noun phrase). From the ratios presented in **Table 2**, this seems to be true. Quirk *et al.* also make claims about the noun phrase serving as an index: '(these) comparisons... make clear how sensitive the noun phrase is as an index of style and how responsive it can be to the basic purpose and subject matter in varying types of discourse' (1985:1352). It is difficult to make any comparisons with these studies, or indeed others, as each study either counts

Text	Interactant	Outsider
GAE-1	28.4%	71.4%
GAE-2	29.9%	70.1%
GAE-3	18.3%	81.0%

Table 4. Frequency distribution for Interactant and Outsider Referent for the GAE text.

Text	Interactant	Outsider
GAE	25.7%	74.0%
HES	17.9%	81.7%
MFN	0.0%	100.0%

Table 5. Frequency distribution for Interactant and Outsider Referent for texts GAE, HES and MFN.

the components in a different way or groups them in a different way (e.g. what counts as a modifier, defining a simple noun phrase, etc.).

3.2. INTERACTANT AND OUTSIDER REFERENCE. Another main area in which texts of different registers are said to vary significantly is with respect to endophoric and exophoric reference. This relates most closely to the distinction made in this study between the semantic options of Interactant and Outsider referents. The results for their frequency distribution are presented in **Tables 4** and **5**. **Table 4** presents the results of this distribution for the GAE texts only. The amount of variation we find is statistically significant, indicating that there is a range, for this speaker at least, of 10% variation between Interactant reference and Outsider reference. This needs to be explored further, as the variation is only statistically significant between times 2 and 3; there was no variation between times 1 and 2. These results show that endophoric and exophoric reference varies not only between registers but also for a given speaker (or at least for this particular speaker).

When we consider the results across speakers for the same text type and across different text types, we find that the variation in this distribution is statistically significant both for text type and individual speakers. As we can see in **Table 5**, there is indeed substantial variation between different speakers and between different text types. The most striking difference is of course the relative absence of Interactant reference in the MFN text. This is not at all surprising, as it is a more formally written informative text.

3.3. THE ROLE OF SUBJECT. There were in fact many areas where variation occurred, but what is surprising is finding features that do not exhibit any variation. One such feature seems to be that of Subject. When we look at what we find in the role of Subject, the referring expression is nearly always 'thing' realized as nominal group. This holds for all time periods for the GAE text, therefore we can conclude that this is a feature that does not vary for an individual speaker. Further there is no variation across speakers of the same text type or across different text types. However, this lack of variation does not hold for Complement and Adjunct roles.

Type of REx	GAE	HES	MFN
Thing	99.6%	99.8%	99.1%
Event	0.1%	0.2%	0.9%
Description	0.0%	0.0%	0.0%

Table 6. Frequency Distribution of type of Referring Expression in Subject Role for all texts.

Text	Subject	N	Non-Subject (Complement or Adjunct)
GAE-1	44.5%	292	55.5%
GAE-2	47.8%	235	52.2%
GAE-3	44.5%	234	55.5%

Table 7. Frequency of Referring Expressions in Subject role for GAE.

Text	Subject	N	Non-Subject (Complement or Adjunct)
GAE-1	44.5%	761	55.5%
HES	40.8%	477	59.2%
MFN	38.4%	212	61.6%

Table 8. Frequency of Referring Expressions in Subject role for all texts

As an alternate view on the relationship between Subject role and referring expression type, we can look at the distribution of all referring expressions in Subject role. **Table 7** gives the results for this distribution for the GAE text and **Table 8** gives the results for all texts. The GAE text does not display any variation in this area and consequently, it seems that this single speaker does not vary in the frequency distribution for the role of Subject. However, there is no statistically significant variation between text HES and MFN where one might expect there to be (see **Table 8**). The variation that we do find is that GAE varies significantly from both HES and MFN. Although not reported here, results for Complement position need to be explored further, since it is not an obligatory element and its occurrence depends largely on the process type involved in the utterance. The results from GAE as compared to HES seem to indicate a peculiarity in the speaker of the GAE texts. This is an area that requires further investigation.

3.4. COMPLEX REFERRING EXPRESSIONS. Finally, we now consider the frequency occurrence and distribution of modification, which is also an area where texts of different registers are said to differ (Quirk *et al.* 1985). The area we focus on here is complex referring expressions; those referring expressions having an embedded referring expression (i.e. post-modification, in structural terms), as in examples (6) and (7), both from GAE.

(6) I bought [a game [called Junior Trivia]]

GAE (set)	HES	MFN
25.9%	21.9%	52.2%

Table 9. Comparative Frequency of Complex Referring Expressions.

Text:	GAE (set)		HES		MFN	
Frequency:	%	N	%	N	%	N
Subject	12.5	11	21.3	17	28.7	52
Complement	79.5	70	52.5	42	54.1	98
Adjunct	8.0	7	26.3	21	17.1	31

Table 10. Comparative Frequency of Complex Referring Expressions by role in clause.

Text:	GAE (set)		HES		MFN	
Frequency:	%	N	%	N	%	N
Subject	6.3	6	13.2	15	53.4	79
Complement	70.8	68	46.5	53	27.7	41
Adjunct	22.9	22	40.4	46	18.9	28

Table 11. Comparative Frequency of Simple Referring Expressions by role in clause.

(7) I want [a little house [with a yard]]

The occurrence of complex referring expressions is relatively low, as we can see in **Table 9**. This is, however, an area of the grammar of the noun phrase that still poses challenges from a functional perspective. For the purposes of this study, we will simply consider their relative frequency in the texts. Academic and scientific texts are known to have a higher frequency of these expressions than other texts. This is suggested above in the ratios given in **Table 2** and also confirmed by various studies (for example, Biber *et al.* 1999, Quirk *et al.* 1985). In the frequency of complex referring expressions within the texts for a single speaker (GAE) there is no statistically significant variation; the rate is constant. Further, there is no statistically significant difference between speakers of the same text type (GAE and HES). However, the MFN text contains far more qualifiers and in fact, a referring expression is more likely to be complex than simple for the MFN text, see **Table 9**.

Table 10 presents the results for the frequency of complex referring expressions in terms of distribution within the clause (Interpersonal role). The figures here represent the distribution of complex referring expressions only. There is very clearly a clustering effect in the role of Complement. For GAE and HES, Subject is the least 'preferred' role for complex referring expressions. The opposite is true for MFN, where Circumstance is the least favoured role for these expressions. Simple referring expressions seem to have a different distribution in the clause than complex referring expressions, as we can see in **Table 11**. We must take care in interpreting these results, because there is obviously an intervening factor; any given clause will have only one Subject but may have two Complements and two

or more Circumstances, for example. Nevertheless the most balanced distribution of roles is found in the MFN text, where there is a very distinct difference between the distribution of simple and complex referring expressions (see actual number of occurrences, N). Simple referring expressions seem to prefer Subject role while complex referring expressions find themselves most frequently in Complement role.

The patterns found in GAE and HES seem to suggest key differences between the two speakers, despite consistency in overall frequency. GAE maintains a clustering effect for Complement role while for HES, the preference for Complement role in the distribution of complex referring expressions does not hold in the distribution of simple referring expressions, where the frequency of occurrence seems to balance out between Adjunct and Complement.

4. SUMMARY AND CONCLUDING REMARKS. This paper set out to consider variation in the use and distribution of referring expressions and to compare results of a single speaker, two speakers of the same text type and then to compare these to a very different text type. Regardless of speaker and text type, there seems to be a strong indication that the relationship between 'thing' referent and nominal group is very strong in English. Further investigation into Participants and Circumstances filled by clauses and quality groups should yield interesting results as this was identified as having significant variation.

With respect to expressions speakers use to refer to themselves or the addressee (Interactant reference), it was not surprising to find that an educational text like MFN had no instances of Interactant referent. However, considerable variation was found between speakers in the same register, and, more surprisingly, for the same speaker within the same register. Further work should consider factors, especially discourse factors, that could explain this latter type of variation.

Despite these differences, there is a relative lack of variation with respect to referring expressions in Subject role. This remains unexplained at this point, although it is clear that Subject is a special role where many functions are simultaneously mapped onto each other. It is a focus point with key information in English: identifying roles in Ideational meaning, identifying mood in Interpersonal meaning, and identifying Theme in Textual meaning. There is no other element of the clause with so much potential. It is perhaps unsurprising that there is a kind of coming together pattern associated with it and as a result it is a very low point for variation, preferring instead grammatical consistency.

The results concerning complex referring expressions demonstrate a lack of variation in frequency when frequency is considered as a percentage of the corpus. However, when considered in terms of the distribution across the clause, it is less clear what the patterns are, if any. The results suggest that simple referring expressions have a different distribution pattern for different speakers and for different text types or registers. This is another area requiring detailed research.

The work presented here reflects a first step towards a better understanding of variation in the production of referring expressions. In order to truly begin to understand variation in this area, research will have to go beyond frequencies and attempt to identify the contexts and loci of speaker choice.

- ¹ The term most commonly used in Systemic Functional Grammar (SFG) is *nominal group* (see Halliday & Hasan 1976:39). In this paper, *noun phrase* and *nominal group* are used interchangeably, with a tendency to use *nominal group* when discussing it from a Systemic Functional perspective.
- ² Fawcett's term (1980:93) is 'referent regarded as quality'. The terms used in this paper, (i.e. three types of referring expression: thing, event and description) correlate to his three classifications of referent: 'referent regarded as thing', 'referent regarded as situation' and 'referent regarded as quality'. 'Description' is the term given here to those expressions which refer to some 'thing' but which do so with respect to its description (e.g. That man is kind). Further, for the purposes of this study, all description-referring expressions have a participant role in the transitivity of the clause (namely Attribute). However, their analysis was not considered in any detail other than frequency of occurrence. In fact, both event- and description-referring expressions were not included in the detailed analysis, since the focus was on 'thing' and the noun phrase.

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PHONETIC VOWEL DISPERSION AS A SOCIOLINGUISTIC VARIABLE: EVIDENCE FROM NORTH AMERICAN ENGLISH

KEVIN HEFFERNAN
University of Toronto

THERE ARE WELL KNOWN SEX-LINKED DIFFERENCES in the speech of men of and women, of which one is that women produced more dispersed vowels than men. This was first reported by Labov:

On Martha's Vineyard, men are more 'closed-mouthed' than women, and use more contracted areas of phonological space... women in New York City and Philadelphia use wider ranges of phonological space than men. (1972:304)

Since Labov's initial observation, any number of researchers have empirically tested for vowel space differences in the speech of men and women. For example, Henton (1995) showed that females' vowel spaces are larger than males' vowel spaces in different dialects of English, French, Swedish and Dutch. Henton plotted normalized vowel data for six languages and dialects on F₁ by F₂ plots using a Bark scale. The data were normalized for comparison across sexes by subtracting one Bark from the females' values. For all six plots, the females' high vowels were higher, the low vowels were lower, and the back vowels more back than those of the males. This same result was also found for Korean, even after normalization (Yang 1992, 1996), suggesting that the difference is not language- or dialect-dependent. Figure 1 illustrates the differences in vowel space for British English speakers.

If the differences in vowel formants were solely due to differences in vocal tract size, then we would expect that all of the vowels would be offset in the same direction so that, for example, all females' vowels would be higher and more front than the corresponding males' vowels. An examination of **Figure 1** (overleaf) shows that the differences tend to be greatest in the F₁ dimension. This is also consistent with Yang's results. F₁ inversely correlates with tongue height. From this we can conclude that the differences in the vowel plots are not anatomical since if anything, men have larger mouths than women and therefore should be able to produce greater height contrasts than women. Rather, as Henton phrases it, women are typically more open-mouthed than men when speaking. This in turn implies that the sex difference is behavioural in nature.

Women have also been observed to make sharper distinctions than men for other contrasts besides vowels. The following list is an example of other work showing sex-linked differences in phonetic-level contrasts:

- vowel reduction in English (Byrd 1994)

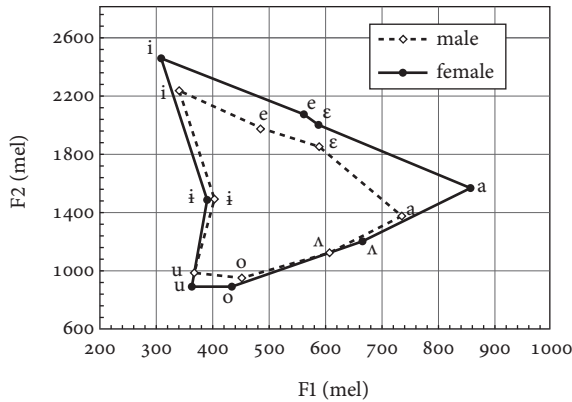


Figure 1. Mean formant values of vowels for British English Received Pronunciation, plotted in F1–F2 space (adapted from Henton 1995, Figure 1a).

- phonemic vowel length in Muskogean Creek (Johnson & Martin 2001) and Swedish (Simpson & Ericsson 2003)
- VOT distinctions in German (Scharf & Masur 2002) and English (Whiteside & Marshall 2001)
- high vowel devoicing in Japanese (Sugiyama 2004)
- vowel pharyngealization in Arabic emphatics (Kahn 1975)
- [s] vs [ʃ] distinction in English (Nitttrouer *et al.* 1989)

In every one of these experiments women produced greater distinctions than men. Sugiyama's (2004) study of sex differences in Japanese vowel devoicing is representative. In certain environments, high vowels devoice. But even a devoiced vowel may still have some voicing, particularly at the offset of the vowel. Men were more likely to produce vowels with a voiced component than women. This results in the females' vowels showing a greater distinction between voiced vowels and devoiced vowels.

1. HYPOTHESIS. The consistency of the pattern across different phonetic phenomena leads to this question: what is the impetus behind the sex-linked pattern? Differences in the speech of men and women stem from two different, but not necessarily mutually exclusive sources: anatomical sex differences in vocal tract, and social differences in the use of speech. The anatomical differences explanation has been explored, for example, by Simpson (2001) and Diehl *et al.* (1996), and therefore will not be pursued further here. The social differences explanation has not, so far as I know, been tested. It is, however, often mentioned as an explanation of the pattern when researchers discuss their results. For example, Whiteside and Marshall (2001:207), in their discussion of the impetus behind their observed sex differences in the production of the Voice Onset Time of voiced and voiceless plosives, write: 'The factors underlying this [sex-linked pattern] can probably be attributed to a number of factors, which include motor speech control, and development, anatomical

and physiological sex-linked development differences, and *sociophonetic and cultural differences*' (emphasis added). The authors do not elaborate what they mean by sociophonetic and cultural differences, instead leaving the reader to speculate.

The objective of this paper is to test for a social component to the sex-linked pattern of greater vowel dispersion in the speech of females than in the speech of males. In order to test for a social component, we need to correlate the extent of vowel dispersion with a socially meaningful construct, such as ethnicity or social class. For this purpose, I choose social class. Our hypothesis is straightforward: given that males' vowels are less dispersed than females' (see references above), and that working-class speech is associated with masculine speech (Edwards 1979; Labov 1966, 1990; Trudgill 1972), we predict that vowel dispersion correlates with social class. Specifically, working-class speakers will show less dispersed vowels than their middle class counterparts.

2. DATA SOURCE. The source for the data is the *Atlas of North American English* (hereafter ANAE) listed in references under Labov et al. 2006. The ANAE is a detailed examination of the variation seen in vowel systems throughout English-speaking Canada and the United States. The speakers were selected from telephone listings and interviewed over the telephone. The interviews were recorded by using a telephone signal splitting device. The earlier interviews were recorded on a Nagra IV, a Nagra E, or a Tandberg Model 9021 reel-to-reel tape recorder. Later interviews were recorded on digital cassette tapes using a SONY TCD-D8 DAT recorder.

Altogether, the project team interviewed 805 speakers, of whom 762 were selected as satisfying the project's definition of a local speaker (i.e. an individual who was born and grew up close to where they are currently residing). See Labov *et al.* (2006, ch. 4) for further details.

The atlas project team carried out first and second formant analyses for 439 speakers. Formant analysis was carried out with the Computerized Speech Lab (CSL) program developed by Kay Electronics. The interview tapes were digitized at a sampling rate of 11,000 Hz using the CSL equipment. Tokens of vowel productions were extracted from the spontaneous speech, minimal pairs, word lists, and the productions of key lexical items. Only highly stressed tokens were selected to avoid the confounding effects of vowel reduction in non-stressed environments. Measurements for each vowel were limited to at most ten tokens to avoid over-representation of one or two frequently produced vowels. These methods resulted in approximately 300 tokens per speaker, with some speakers having as few as 200 tokens but others having as many as 400 or 500 tokens. Altogether, approximately 134,000 vowel tokens were measured. The average values for each formant for each vowel are published in a Microsoft Excel spreadsheet format on the multimedia CD that accompanies the hardcopy version of ANAE.

Each of the speakers was coded for several social characteristics, of which I use three: sex, socio-economic index, and dialect region. The other characteristics are ethnicity and city of residence. Sex is either male or female. Socio-economic index (SEI) scores are assigned by the researchers from published scores for the various occupations (Duncan 1961, Nakao & Treas 1989, Nakao & Treas 1992). These scores reflect not only the education and income levels of the occupation but also the prestige associated with the various occupational titles

and therefore are an improvement over just the occupation itself. The scores ranged from 18 at the lower end to 96 at the upper end. Several of the speakers did not provide adequate occupational information to assign a SEI score. Either their job description was too vague, such as 'I work in an office', or their job description did not match one of the published occupations. SEI scores were not assigned to these speakers. Women who reported themselves as homemakers were assigned a SEI score according to their husband's occupation. Youth who had yet to enter the job market on a full-time basis were assigned a SEI score based on the primary income of the household. College students are in a transitional state and may be upwardly mobile. They were therefore left unclassified. All together, 131 of the subjects were not classified for SEI. Of the 439 speakers with acoustic data, the SEI index ranges from 22 to 96, and 75 speakers were not assigned a SEI score.

3. **METHODOLOGY.** I conducted two analyses, one for front vowels and one for back vowels. I attempted to derive a single measure of vowel dispersion, but I found it impossible for reasons to be discussed shortly. The Front Vowel Dispersion (FVD) Index is the Euclidian distance between /i/ and /æ/. The Back Vowel Dispersion (BVD) Index is the Euclidian distance between /u/ and /ɑ/. Following Yang (1996), the Euclidian distance between two vowels was calculated using the formula in (1). The subscripts indicate the vowel. For each vowel, the average formant value published on the CD accompanying the ANAE was used.

$$(1) \quad d = \sqrt{(F1_1 - F1_2)^2 + (F2_1 - F2_2)^2}$$

These indices should be a good indicator of how spread out the front and back vowels are in general. For both analyses, I began by converting the non-normalized formant values published in the ANAE from Hertz to mels. Although Labov *et al.* (2006) publish the normalization formula they used when analyzing the inter-speaker variation, I used non-normalized values. The normalization process is designed to eliminate consistent sex differences in the formant values due to differences in vocal tract length and therefore runs the risk of eliminating within-sex vowel space differences as well. The consequence of using non-normalized data is that we must keep the sexes separate in the analysis and cannot directly compare the results for one sex to those of the other. The mels scale is non-linear and reflects more accurately how the human ear actually perceives pitch. For example, a tone that is perceived to be twice as high in frequency as another tone is double the number of mels. This is not true for the Hertz scale, which does not reflect actual human perception of tones (Yost 2000). Because we are concerned with the way people perceive differences in the voice and males and females and then use those perceived differences in the construction of social gender, it is very important to use a psycho-acoustic scale such as mels.

The primary determinant of dialect differences in North America is regional differences in the pronunciation of vowels. These differences are a result of both ongoing and complete sound changes. Regions that are currently undergoing vowel changes that involve either of the vowels used in the calculation of a Dispersion Index score were removed for that index. This is necessary to avoid confounding the results: if we include data that reflects sound change, then we will not know if any observed differences are due to vowel dispersion of

Regions removed from the FVD index calculation	Regions removed from the BVD index calculation
Inland North (Northern Cities Shift)*	south and western USA (/uw/ fronting)
Mid and Western Canada (Canadian Shift)	New England (low back merger)
South (Southern Shift)	Inland North (Northern Cities Shift)

Table 1. *The regions removed from the FVD and BVD index score calculations. (*The ongoing sound change that motivated the removal of the region is listed after each region in parentheses. The geographical extent of each of these regions and the sound changes listed are described in detail in the ANAE.)*

	FVD	BVD
males	87	8
females	121	18

Table 2. *Remaining speakers broken down by sex.*

differential participation in the sound change. **Table 1** lists the regions that were removed, along with the name of the sound change.

Once the confounding regions for the front vowels were removed, 256 speakers remained; of them, 48 did not have a SEI score. For the back vowels, only 33 speakers remained; of them, 7 did not have a SEI score. The lack of a sufficient number of speakers with both stable front and back vowels prevented the creation of a single dispersion index. **Table 2** shows how the remaining speakers break down for sex.

4. RESULTS. Regression analysis was run on the vowel dispersion index scores for the speakers with SEI scores to determine how well SEI predicts vowel dispersion. The ability of a speaker’s SEI to predict their FVD is marginally significant for the males, $\beta = .202$, $F(79) = 1.83$, $p = .07$, and not significant for the females, $\beta = .118$, $F(119) = 1.30$, $p > .10$. The results for the back vowels parallel the front vowels—the ability of a speaker’s SEI to predict their BVD was significant for the males, $\beta = 1.02$, $F(6) = 8.46$, $p = .027$, but not for the females, $\beta = 0.45$, $F(16) = 1.31$, $p > .10$. The β values reported here are the slopes of the lines of best fit.

Figures 2 and **3** (overleaf) show the scatterplots for the correlation between the dispersion indices and SEI for the males. The upward slope of the regression line shows that the greater the SEI score for the speaker, the more of a distinction the speaker makes between the low vowel and the high vowel. These results suggest that BVD has social significance to the males, but not the females.

These results suggest a social component to the sex-linked pattern that women use a larger phonological space than men. Specifically, middle-class male speakers use a larger phonological space than working-class male speakers for both front and back vowels.

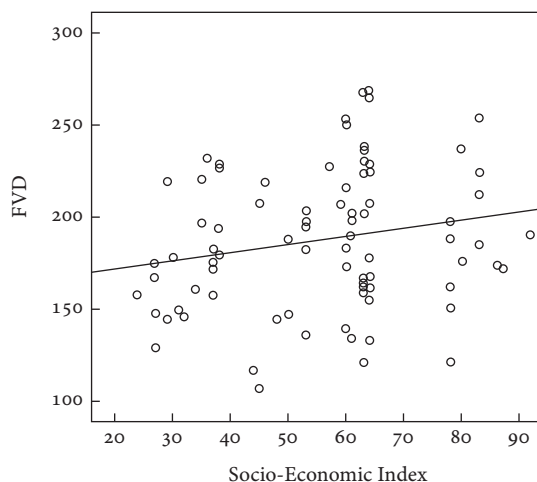


Figure 2. Scatterplot of FVD and Socio-Economic Index for 81 males.

5. IMPLICATIONS. The finding of a correlation between SEI and the vowel dispersion indices has implications for our understanding of vowel change in general. It is a well known fact that English vowels are not stable, as attested by the numerous changes in progress in North American English, and English throughout the world for that matter. There are two ways a vowel system can change: a single vowel moves independently of the rest of the system, or a number of vowels move in a chain shift pattern. A single vowel moving in isolation often results in the reduction of the distance between that vowel and an adjacent vowel, in other words, a vowel merger. Chain shifts, on the other hand, involve the maintenance of the distances between vowels. Given this, we can make a prediction: women will lead sound changes that maintain vowel dispersion (chain shifts), while men will lead sound changes that reduce vowel dispersion (vowel mergers). We have plenty of evidence that women lead chain shifts, as reported by Labov:

[T]he cases [of sound change] where men are in the lead form a small minority. Furthermore, the male-dominated changes are all relatively isolated shifts. They do not include chain shifts that rotate the sound system as a whole: all such chain shifts examined so far are dominated by women. (2001:284)

My own examination of vowel mergers in North American English shows that they are led by men (Heffernan, in progress). So it seems that Labov's (1972:204) observation on sex differences in phonological space (see quotation above) and his 2001 observation on sex differences in sound change may be connected, and that women lead vowel changes because their vowels are more dispersed. Of course, as soon as other factors come into play, such as prestige or stigmatization, then these factors will most likely overrule any effect vowel dispersion has. The next step is to directly test the implied connection between Labov's observations

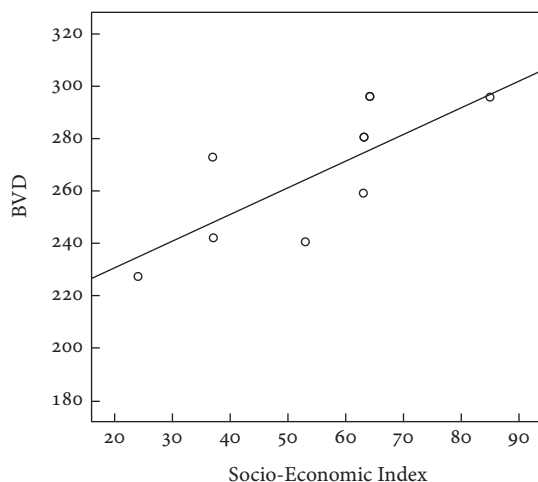


Figure 3. Scatterplot of BVD and Socio-Economic Index for 8 males.

by examining vowel dispersion in the leaders of vowel chain shifts and vowel mergers. Work such as this will lead to a better understanding of sex differences in language variation and language change in general.

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DISCOURSE OPERATIONS AND RANKING IN VARIABLE FORMS OF PARTICIPANT REFERENCE

SHIN JA J. HWANG

Graduate Institute of Applied Linguistics/SIL International

PARTICIPANT REFERENCE contributes crucially to the cohesion and coherence of a text.¹ A text of any type is about one or more discourse topics. A story may be about a participant involved in events and actions, while an expository text may be about a topic such as forgiving, love, elections, and health. The same entity or concept is not referred to by the same linguistic expression throughout the text. Variable forms are used at different points in the text, e.g. a noun phrase with a relative clause, a pronoun, and ellipsis (zero anaphora), although they all refer to the same entity. This paper shows that the variable forms used in referencing the participants in narrative are affected by the participants' rank in the story and by the type of discourse operation in which the referents occur.

Much research has been done on variables in participant reference based on information flow, some using quantitative methods. Following Staley (1995) and Huang (2000), we may group them into three models. First, the topic continuity or recency model is used with good statistical results by Givón and others showing the iconicity principle: 'The more disruptive, surprising, discontinuous or hard to process a topic is, the more coding material must be assigned to it' (Givón 1983:18). Second is the hierarchy or episode model, which finds evidence for heavier coding of material across structural boundaries (Hinds & Hinds 1979, Fox 1987, and Tomlin 1987). Third, the cognitive or memorial-activation model is concerned with cognitive factors such as memory and attention (Prince 1981, Chafe 1994, and Tomlin 1987). The first two have to do with the nature of discourse structure, which is both linear and hierarchical. They are closely related to the more fundamental issue of cognition. These three models are not discrete types but merely reflect the primary focus of the researchers.²

Although these methods provide insight for explaining overall variable forms, they do not fully consider discourse operations interacting with discourse structure and ranking among participants in discourse. Longacre (1995) presents discourse operations included in ordered triplets as a descriptive device reflecting three variable factors, illustrating with isolated examples (see Section 1). This paper, using textual data found in two short stories in English, discusses a variety of discourse operations influencing the choice of referring expressions. Three factors influencing the referential choice are first discussed in Section 1, following Longacre. They are given in a general and universal way, which is to be applied to individual languages. Sections 2 and 3 present the application of the method to the sample texts. There are issues beyond the NP, e.g. word order shift and construction type such as presentational and focus, which are mentioned as applicable to the particular texts.

I. THREE VARIABLE FACTORS.

1.1. PARTICIPANT REFERENCE RESOURCES. Each language has its own inventory of resources to refer to participants. English uses a noun phrase (NP) with varying degrees of qualifying adjectives or relative clauses, a noun, a pronoun, or a zero or null reference. Preferred participant reference resources vary across languages, but we can list six general forms, from full NPs to zero/null reference (Longacre 1995):

1. Nouns, including proper names, accompanied by qualifiers ranging from (in)definite articles, adjectives, and relative clauses, within the NP or going beyond to separate sentences
2. Nouns without qualifiers (except the definite article as in English)
3. Surrogate nouns, such as terms of kinship, social role, and occupation
4. Pronouns and deictics
5. Affixal elements (verb agreements for subject and object, possessor affixes on nouns, and switch reference markers on verbs)
6. Zero or null reference

They form a scale similar to the topicality scale in Givón (1983), from those for the most discontinuous to those for the most continuous and accessible. The top three points are separated here instead of being just one NP category. Different discourse operations affect greatly the kind and the length of NP employed at a given point in discourse. A language may use resources from different points along this scale. The usage of indefinite vs. definite articles vs. bare singular NP presents a problem for insightful explanation in languages like English. In Korean and Japanese the usage of topic vs. subject particle similarly proves recalcitrant. The functions of these particles overlap with those in the article usage but only to a certain extent.

Pronouns and deictics notoriously vary in their functions in different languages. It is difficult to imagine an English story without pronouns, but it is not uncommon to encounter a story in Korean or Japanese with no pronouns (Honda 1989). In these languages, the functional equivalent to pronouns can be either a minimal head noun or zero anaphora.

Affixal elements apply only to those languages that have agreement or indexing patterns. In English verb agreement occurs only in the third person singular present tense, which is infrequent in stories, which are typically in past tense. In Greek and Spanish, verb agreement is required whether the subject is explicit or not. Possessor affixes may occur in head-marking languages, e.g. 'hat-3sg John' where 'his.hat' is the head of the possession phrase. Switch reference languages mark cataphorically whether the following clause in the chain of the sentence has the same subject or a different subject, usually as suffixes to the verb. Zero anaphora is less common in verb agreement languages, but is frequently found in Korean, Japanese, and Chinese (Pu 1997).

1.2. RANKING. Participants may display different patterns of reference depending on their ranking in the story, from major (central and non-central) and minor (restricted or limited role) to props (human or non-human).

1.3. DISCOURSE OPERATIONS. Ten types of discourse operations that have been found to influence a reference form in languages are listed in (1) with mnemonic indexing letters. A text or a given language might not use all ten, or more may be added.

- (1) F First mention within a story
 - I Integration into the story as central
 - T Tracking routinely
 - R Restaging or reinstatement
 - B Boundary marking episode or sub-episode
 - C Confrontation and/or role change
 - L Locally contrastive/thematic status
 - E Evaluation or comment by the narrator
 - A Addressee in dialogue
 - X Exit

When a participant is first mentioned (F), the most explicit form of NP tends to be used, with descriptive adjectives or relative clauses. The indefinite article may be used in English, or the expression 'a certain' to signal new information. Operation F may have an NP in the subject role in a presentational construction (with a VS order), especially in the case of major participants, or the NP may simply appear in the object or other roles for minor participants and props.

In some texts, a participant is integrated (I) as central by repeating the form used for F or using more information than is needed for identification. Right after F, a succeeding sentence may refer to the referent with a full NP with a demonstrative, e.g. 'this hat seller'.

Tracking routinely (T) is an operation that does not call for any special marking, as in continuous, subsequent references to a referent already introduced inside the discourse unit boundary. T is expected to use the form least explicit, such as zero anaphora, an affix, or an unstressed pronoun. It would be a common form used in reporting eventline information.

Restaging (R) and boundary marking (B) may co-occur, since frequently a participant may be restaged in a new episode, but they need not coincide, so we set them up as two types of operation. Confrontation (C) and local contrast (L) may also occur at the same time, or even evaluation (E). At the point of confrontation or climax, often the eventline is suspended and some evaluative comment may occur. In a language like Koine Greek, the addressee (A) in a dialogue exchange may take a special form—an articular pronoun—as subject in the following sentence, instead of only a verb affix, when countering the previous speaker's point. An exit (X) from the story may be specially marked in some stories, e.g. when a noun or NP used at the beginning of the story or episode is repeated at the end.

2. HANS. Starting with the short story of Hans (Hwang 1997, 2006), we discuss how the participants and props are referred to in a story. See the Appendix for the text (Gee 1955:106–7), where references to the central character are marked in boldface, to a prop in italics, and to a minor character by underlining.

Hans, the central participant of the story, is the only one who is given a name and occurs in all the episodes. He is first mentioned (F) as *Little Hans*, a proper noun with an adjective (in s5). Then he is mostly kept track of (T) by a pronoun or zero. Zero anaphora occurs in a non-initial clause of a sentence or in a clause with a non-finite verb such as a participial clause with *-ing*. When he is refocused after the girl gives him an apple, the proper noun *Hans* with no adjective is used (in s9). It is like restaging (R) although he is never off-stage. The name *Hans* occurs in s26 after a series of sentences giving his inner thoughts, and it helps mark the episode boundary (B). At the point of highest tension—when Hans has no money at the offering time, he is appropriately referred to as *Hans—poor Hans*. This can be attributed to confrontation (C) and/or author evaluation (E). The predicate nominal in s6 (*an unwanted bit of humanity*) along with other descriptions of him (*perished with cold, ragged*) may be considered E as well.

The focus shifts away from Hans again after he places the apple on the offering plate, and the actions of the usher and priest are reported. Then the closing section starts with *And behold* in s30, and *little Hans* is used again (almost like X), forming an inclusio with the identical F. The last sentence has a pronominal reference in *His joy*.

The matrix in **Figure 1** shows reference forms used for some of the participants and props in relation to discourse operations.

The girl is first mentioned in the subject role with an indefinite article and adjective, *a little girl*, and the apple similarly but in the object role, *a big rosy apple*. Tracking for both is accomplished through pronouns (*she, it*) along with zero reference, following the same rule used for Hans. The girl exits from the story after her brief role as the agent who gives the apple, but the apple, although an inanimate prop, is significant throughout the plot structure. It is referred to at confrontation (C) as: *his apple* and *that* (the latter printed in italics). For local contrast (L), it is *the red apple* with a color term, apparently in contrast to silver coins on the plate and even to the gold color that it becomes. Typical for props, it occurs in the object role until it restages (R) as *the apple* in s30 as subject. It retains its subject role with the pronoun *it* in the next sentence, with a long evaluative description (E) of what it turns into: *It became shining gold—the most precious of all gifts, and well-pleasing in the sight of God*.

The people are first mentioned as *Fine people . . . ladies with furs, gentlemen in splendid attire*, and further referred to with a pronoun: (*many of*) *them* and *their*. They are restaged as (*most of*) *the folk* and contrasted with Hans locally as *others* and *all the people*, which may be considered operation confrontation (C) occurring at climax.

The ushers are first mentioned as *dignified men coming down the aisles*, and the particular usher who took the apple as *the man who took the apple*, an NP with a relative clause. Further tracking of him is by the pronoun *he* three times as subject. The priest is introduced with a definite article as one who is accessible in the frame of the service in a cathedral: *the man in the fine clothes . . . the one standing on the steps amid all the bright candles at the far end*. Later he is restaged as *the priest*. Not being a continuous topic, he is never referred to by a pronoun but as *the priest* with a long relative clause.

The cathedral is introduced as *the great cathedral* with a definite article, the most imposing church in the city of Strasbourg. This first mention occurs in a sentence very unusual

Discourse Operation	Hans	Girl	People	Apple	Cathedral	Priest
First mention (F)	Little Hans	a little girl	Fine people... ladies with furs, gentlemen in splendid attire	a big rosy apple	the great cathedral	the man in the fine clothes... the one standing
Tracking (T)	he/his/him Ø (in non-initial clause or with non-finite verb)	she/her Ø	them	it	its Ø	
Restaging (R)	Hans; little Hans		(most of) the folk	the apple	the cathedral	the priest
Boundary (B)	Hans; little Hans					
Confrontation/Local contrast (C/L)	Hans-poor Hans		all the people; others	his apple; <i>that</i> ; the red apple		
Evaluation (E)	Hans-poor Hans; an unwanted bit of humanity			shining gold—the most precious of all gifts, and well-pleasing in the sight of God		

Figure 1. A matrix of discourse operations and participants/props in Hans.

in its syntactic structure. The adverb phrase *Above the roofs* is fronted (in s₃), and then the preposed participial clause occurs with zero reference (*Ø rising high into the clouds*). The main clause is in a VS word order (*stood the great cathedral*), and is followed by two postposed clauses providing further description (*its stones dim in the gathering gloom, its windows catching the lights within*). The inverted order is not unusual after a sentence-initial adverb phrase, as is also seen in s₁₄. But we should still ask the question why the adverb is fronted triggering the VS order, i.e. why not *The great cathedral stood rising high into the clouds above the roofs ...*? The sentence that introduces the cathedral links the descriptions of the city and its bleak circumstances (s₁–2) and the people going to church (s₄). Fronting the phrase *Above the roofs* ties the sentence more closely with s₂, which describes the city with *the chimneys* and *the narrow streets*. This sentence is a presentational construction without being the typical *there was* type, but still in a VS order. Tracking of the cathedral within the immediate context is done by the usual pronominal reference (*its*), as shown in the two postposed clauses in the same sentence. Further reference in non-continuous sentences is made with a noun with only the definite article *the cathedral*.

3. THE THREE LITTLE PIGS. The story (as retold by Southgate 1965) starts with *Once upon a time there was a mother pig who had three little pigs*, a very common formulaic aperture in stories of this kind. The mother is introduced first with an indefinite article and then the main participants in a relative clause. The mother pig exits from the story in the next sentence when she (*their mother*) warns of the wolf. The three little pigs act as a group at first, then gradually partition to individuals. Reference form variation is similar for the first and second little pigs, who exit from the story midway by being eaten by the wolf.³

In the first part of the story about house-building, the pattern of reference is similar for all three. A full reference as the first/second/third little pig occurs after an episode boundary. The same full NP may be repeated across a sub-episode unit (operation B), as in s₂₆ after closing the quotation in s₂₅.

- (2) s₂₅ 'I shall build a stronger house than yours,' said **the third little pig**.
 s₂₆ **The third little pig** walked on, along the road by himself.
 s₂₇ Soon **he** met a man who was carrying some sticks.

In s₂₆ the third little pig continues on in the subject role (after s₂₅ with a VS order in the quote formula), but still takes a full reference because it occurs at the discourse boundary. Once in the same unit, a pronoun reference is used for T when there is no subject switch. When there is a switch within an episode, each of the little pigs is referred to as *the little pig*, without the number designation, since there is no ambiguity.

Once the third little pig alone is left, *the little pig* is used in the last three sub-episodes for B as well. Twice, inside an episode, in (3), the phrase is used without the article, treating it more like a name. Earlier, the wolf uses it like a name when he calls out to each little pig in that form, '*Little pig, little pig, let me come in*' in rhythmic repetition.

- (3) s₁₀₀ As **the little pig** was going home, **he** saw the wolf coming up the hill.

- (3) s101 **Little pig** was very frightened, so **he** jumped inside his butter churn.
 s102 The butter churn began to roll over and over, down the hill.
 s103 It rolled faster and faster.
 s104 It knocked the wolf down.
 s105 The wolf did not know what had knocked him down.
 s106 He was so frightened that he ran away as quickly as he could.
 s107 **Little pig** jumped out of his butter churn and **o** carried it home.

Its occurrence in s101 is particularly intriguing where a pronoun might have been sufficient, since the same subject chain continues from the previous sentence. This excessively strong form might be attributed to operation C at peak. This is where the third little pig comes to the closest contact with the wolf—a physical contact with the wolf while inside the butter churn—away from his safe brick house.

There are thus variable forms in reference among full NP forms shifting from the beginning of the story to the end, e.g. those used for the third little pig in a chiastic form.

- (4) The third little pig
 The little pig
 Little pig
 The little pig
 The third little pig

After the form without the article occurs, *the little pig* is used four times, then the last sentence of the story ends with the fullest form: s123 *The third little pig was too clever for him*. This full reference is used for two reasons: for operation E and for closing the story about the three little pigs even though the first two die earlier. One other E occurs earlier in the story (in s68) with the ordinal number, again even after the death of the two. Such a global level E presupposes the perspective of the whole story.

- (5) s67 'Very well', said **the little pig**.
 s68 But **the third little pig** was a clever little pig.
 s69 **He** knew that the wolf just wanted to eat **him**.

A same subject chain within the same sentence uses zero anaphora in non-initial clauses, as in the following examples, with the exceptions to be discussed below.

- (6) s37 The wolf knocked on the door and **o** said, 'Little pig, little pig, ...
 s90 He ran all the way home and **o** shut his door quickly.
 s107 Little pig jumped out of his butter churn and **o** carried it home.

The first exception is when there is a shift in the semantic nature of the verb in the second clause. In the following examples, the first verb describes an internal feeling while the second describes an outward behavior or action. Slight local discontinuity is also shown by the

kind of conjunction (*but* and *so*, as opposed to *and* above) and the use of a comma separating the two clauses.

- (7) s62/77 The wolf was very angry, but **he** pretended not to be.
 s84 The little pig was very frightened, but **he** pretended not to be.
 s101 Little pig was very frightened, so **he** jumped inside his butter churn.

The second exception occurs in huffing and puffing, both within the quote and narration. This excessive reference with *he* to the wolf in repetition seems to be for a rhythmic pattern. Note also the repetition of *and*, which adds to the rhythm.

- (8) s41 'Then **I**'ll huff and **I**'ll puff and **I**'ll blow your house in', said **the wolf**.
 s42 **So he** huffed and **he** puffed and **he** huffed and **he** puffed.
 s43 The house of straw fell down and **the wolf** ate up the first little pig.

The third exceptional case occurs when the word order of the first clause is inverted to VS following a direct quotation, where S identifies the speaker. The unusual order of the subject after the verb apparently creates slight discontinuity in topicality, so a pronoun is used. Notice that *and*, which is a conjunction of continuity, is used, but with a comma signaling a minor discontinuity: 'Yes', said **the man**, and **he** gave the third little pig some bricks (s30).

In discussing Mandarin Chinese, Pu (1997) similarly notes local incoherence or minor thematic discontinuity when a pronoun is preferred to zero anaphora, such as a local topic change, after a time or locative phrase, intervening materials, and storyline interruption. In addition, both in English and Mandarin, a pronoun instead of zero anaphora may occur for referential emphasis.

4. SUMMARY OF ENGLISH PARTICIPANT REFERENCE. We formulate general rules of the English participant reference system based on the patterns found in the two stories. The rules are sensitive to different discourse operations, e.g. F and T, and to the ranks and numbers of the participants.

First mention: Nouns (including proper names) plus qualifiers, such as the article, adjective, relative clause, and descriptive sentences.

1. Central participant: Adjective + proper name; full NP (with adjective or number): *Little Hans*; *the third little pig*
2. Major participant: full NP (with number and adjective): *the first/second little pig*; *the wolf*
3. Minor participant or prop (singular): Indef. article + adjective/relative clause + generic noun: *a little girl*; *a big rosy apple*; *a man who was carrying some straw/sticks/bricks*
4. Prop or location accessible to the reader: Def. article + (adj.) + noun: *the great cathedral*

5. Minor participants (plural) in background: Adj./prep phrase/relative clause + generic noun: *Fine people ... ladies with furs, gentlemen in splendid attire ...; dignified men coming down the aisles*
6. Minor participant (singular) in foregrounded frame who is identifiable in context: Def. article + generic noun + prep phrase/relative clause: *the man in the fine clothes ... the one standing on the steps amid all the bright candles at the far end; the man who took the apple*
7. Minor participant related to major participant: Genitive pronoun + kin term: *her mother; their mother*

Tracking routinely: Pronouns or zero reference

1. Pronouns: within the same discourse unit/episode
2. Zero reference: in non-initial clauses in the sentence (with same subjects and semantically similar verbs) or in participial clauses with *-ing*

Restaging or Boundary marking: Proper name, or noun with a definite article (without qualifiers except for disambiguation): *Hans, the apple, the folk, the cathedral, the priest, the plate; the first/second/third little pig, the little pig*

Confrontation at climax, overlapping in function with Local contrast: Noun with appropriate qualifier (a crucial quality relevant to plot, which is often different from the one used in F), or noun or NP with no article: *Hans—poor Hans; his apple, that, the red apple; all the people, others; little pig*

Evaluation: Full NP or clause with evaluative adjective: *Hans—poor Hans; the most precious of all gifts and well-pleasing in the sight of God; The third little pig was a clever little pig; the third little pig was too clever for him*

In English narrative, different forms of participant reference—zero, pronoun, or NPs of varying lengths and qualities—are well motivated based on discourse operations and the rank of the participant. Ranking of the participant or prop affects most crucially the forms used in First mention: central, major, minor, or prop. Ranking is less important to other operations like Restaging and Tracking, and general rules for each operation may be set up for all participants. All discourse operations, except Tracking, call for the use of the NP in the sample texts. Since the choice among variable NP forms is dependent on the type of operation, it is crucial to include discourse operations in the study of participant reference.

5. CONCLUSION. This paper has shown that discourse operations and ranking are important factors governing the use of variable forms in referencing the participants in narrative. A central participant is introduced by a long NP with descriptive information in the subject role, whereas a minor one is introduced in the object role. A minimal or full NP, rather than a pronoun or zero, is used after a discourse structure boundary even when there is

little or no referential distance, as when *the third little pig* was repeated across the sentence boundary with no subject switch. A referent is restaged by a minimal NP, usually a noun plus the definite article, rather than by a pronoun or zero. In addition to the methods developed for the study of reference in terms of cognition and discourse structure over the last few decades, the application of discourse operations and ranking provides further insight, especially in understanding the marked and exceptional cases and the variable NP forms.

- ¹ I am grateful to Les Bruce, Marlin Leaders, and Pete Unseth for their valuable comments on the paper.
- ² Dooley and Levinsohn (2001) present a model combining two interacting strategies, sequential and VIP (very important participant) strategies, so as to account for default and marked forms of reference. Their method in eight steps is quite practical in cross-linguistic application, making the important distinction between subject and non-subject.
- ³ Due to space limitation, a matrix of discourse operations and participants is not given for this story.

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APPENDIX

1 The winter afternoon was dark and grey over old Strasbourg. 2 Little flurries of snow came whirling down between the chimneys and a biting wind blew in the narrow streets. 3 Above the roofs, rising high into the clouds, stood the great cathedral, its stones dim in the gathering gloom, its windows catching the lights within.

4 Fine people were hurrying up the broad steps—ladies with furs, gentlemen in splendid attire, many of them coming in their carriages. 5 **Little Hans** watched them. 6 **Perished with cold, ragged, an unwanted bit of humanity, he** snuggled between two buttresses—a retreat from the wind—and wished *he* dare go into the cathedral where all was warm and bright, and where (as *he* could dimly hear) the organ was pealing loudly.

7 Suddenly a little girl left her mother as she came up the steps, ran towards **him** (all loveliness as she smiled) and thrust *a big rosy apple* into **his** hands. 8 “*That’s for you, little boy,*” she said.

9 Then she and her mother went in at the great west door, and **Hans** stared at *the apple*. 10 **He** thought at first *he* would eat *it* there and then, but *he* wanted to keep *it* for a time, so *he* held *it* in **his** hands, and went timidly to the door of the cathedral. 11 Most of the folk were in, and the service had begun. 12 No one turned **him** away. 13 **He** plucked up courage and crept inside, slinking into a pew at the back.

14 Only vaguely could *he* understand the service, but it was wonderful. 15 **He** loved the singing, the colour, the warmth. 16 Then something terrible happened. 17 Before *he* realized it, dignified men coming down the aisles were taking up the collection, and **Hans—poor Hans**—had nothing to give. 18 **He** would have run out had *he* not been too frightened to move. 19 What was *he* to do? 20 Others were giving money—*he* could hear it. 21 **He** had nothing ... nothing to give God except *his apple*, and *he* could not give *that*. 22 **He** dare not. 23 What would all the people say? 24 What would the man in the fine clothes say—the one standing on the steps amid all the bright candles at the far end? 25 And wouldn’t God be angry, too?

26 It seemed to **Hans** as if all eyes were fixed on **him** when, in an agony of fear, *he* timidly placed *the red apple* on the plate. 27 **He** held **his** breath, but no one spoke, and the man who took *the apple* did not frown. 28 He allowed *it* to remain on the plate with the silver coins. 29 Slowly he walked along the aisle and up the steps to the choir, where he handed the plate to the priest, who blessed the gifts and then reverently placed them on the altar.

30 And behold, as **little Hans** watched, *the apple* changed. 31 *It became shining gold—the most precious of all gifts, and well-pleasing in the sight of God.*

32 **His** joy was boundless.



INTONATIONAL VARIABILITY IN FRENCH

SVETLANA KAMINSKAÏA
University of Western Ontario

THIS PAPER DEALS WITH INTONATIONAL DIALECTAL VARIATION in spontaneous French, specifically to identify those melodic markers which lead to Québécois intonation being described as more modulated and having a larger span than the intonation of French spoken in France (Ménard 1998). Our hypothesis is that the intonational contours are shared by both dialects and that the dialects differ in the surface realizations at the phonetic level.

We propose to test this by comparing surface realizations of a continuity contour described as a sequence of two low tones and a high tone ($L1L2H^*$) as it is realized in the French variety spoken in the Troyes region (FF), and of the Québécois variety spoken in the Québec Cité area (QF). A comparison of the surface realizations of this contour is done on two prosodic levels, Accentual Phrase, hereafter AP (Jun & Fougeron 1995), and Melodic Phrase, hereafter MP (Kaminskaïa 2005), and it reveals that melodic differences observed on the level of MP originate from the AP level.

1. THEORETICAL FRAMEWORK. This study is conducted in the framework of autosegmental-metrical phonology adapted for French (Jun & Fougeron 1995, 2000, 2002). In this approach, the minimal prosodic unit AP, defined by an obligatory final stress, has an underlying tonal pattern—a sequence of low (L) and high (H) tones— $LIHIL2H^*$, where H^* is associated with the syllable bearing the obligatory primary stress, and Hi is linked to the syllable with the optional secondary stress, if it is realized. $L1$ is the phrase-initial tone, while $L2$ is timed with the syllable that precedes H^* .

The underlying tonal pattern has different surface realizations (LIH^* , $L1L2H^*$, $LIHiH^*$, etc.). In the continuity contour $L1L2H^*$ chosen here, $L1$ is aligned with the beginning of the AP, H^* with the final stressed syllable, and $L2$, with the syllable that precedes it. Schematically, this curve can be represented as ____/, a low plateau followed by a final rise. The right boundary of this prosodic unit is determined on the basis of (final) stress placement and the visible melodic contour.

APs gather into the prosodic units of the next level, MP (Kaminskaïa 2005) and are intonationally dependent. In this way, the right boundary of an MP is marked by a higher F_0 value (Mertens 1993), unless it is a finality. The right boundary of this unit is defined on the basis of not only phonetic but also syntactic criteria, and it was drawn

- after a finality contour (high or low);
- when speakers changed turns, with rare exceptions such as in (1)a;
- before a pause, except in cases when it did not interrupt pitch contour (1)b;

- after a false start that was not continued (1)c;
- after hesitations, truncated text, vocatives, parentheses, after *puis*, *bien*, *alors*, etc. that occurred at the beginning of an utterance, and after *oui* and *non*.

- (1) a. F1: C'était// l'premier// – E: Ouais//} – F1: janvier deux mille//
 b. F3: pour l'année// pause// deux mille//}
 c. F3: à la vi-//} pause//} que// qu'à la ville//};
 cf. with Q4: elle est// elle est transparente//}

Here, // and } are AP and MP boundaries, respectively; APs forming one MP are underlined.

2. METHODOLOGY.

2.1. DATA. Spontaneous recordings used in this analysis come from ten female speakers: five from France (Troyes region, FF) and five from Canada (Québec Cité region, QF). All speakers participate in unstructured interviews (entrevues libres) with their friends or relatives. Canadian data are part of the database of the project Phonologie du français contemporain (PFC, Durand *et al.* 2002), and French data were collected following the PFC protocol.

Recordings are analyzed using PRAAT, where speech sequences of the speakers are phrased. Tonal patterns are assigned to phrases according to perceived prominences, visible contour and their length (in syll.). These parameters allow us to make judgments about prosodic similarity, the concept that underlies our study.

2.2. PROSODIC SIMILARITY. This concept, introduced in Poiré and Kaminskaïa (2004b), allows us to select comparable prosodic units for analysis. For our study of spontaneous speech, we consider two APs prosodically similar if they share the following specifications:

- surface intonation (melodic specification);
- number of syllables;
- association of tones to segmental material (timing);
- position within the MP;
- duration (msec) for a given number of syllables. Phrases that fall within the limits specified by the formula in (2) are kept for comparison:

- (2) $\text{Avg} \pm 2 \cdot \text{std}$ (where **Avg** is the average duration of an APs (msec) for a given number of syllables, and $2 \cdot \text{std}$ is the standard deviation multiplied by 2.)

Such parameters as the same internal structure and position regarding pauses introduced in Poiré and Kaminskaïa (2004b) in addition to these five can be omitted because the internal structure dictates the primary stress placement and the number of syllables motivates the secondary stress placement; since both stresses define the intonational contour, the latter depends on the internal structure of an AP, which happens in this way to have been taken into consideration already. As far as pauses are concerned, since they determine MP

The choice of the exact parameters of prosodically similar APs is dictated by their distribution. Thus, the L1L2H* continuity pattern is the most frequent in both data sets. Most commonly, this pattern accompanies APs of three and four syllables, and therefore, its most frequent timing is 123 and 134 (tone L1 being associated with the first syllable, tone L2 with the second, etc.) Since MPs consisting of two and three APs are the most numerous, contours in such MPs are selected.

(3) a. Parce qu'on voit// à travers//
(POS1, 3syll) (POS1, 3syll)

b. **Que j'habiterais**// **dans un p'tit**// chalet//
(POS3, 4syll) (POS2, 3syll)

2.3. ANALYSES APPLIED. Different types of analyses are used in this study. A phonological approach helps determine the level and the units of comparison. Combined with acoustical analysis, it helps phrase data into these units. Together with the concept of prosodic similarity, it defines precise points in the intonational curve to be compared. This is done using normalization by z-score transformation, which brings out dialectal markers belonging to the minimal prosodic level. Their presence at a larger prosodic level is then verified by the semitone transformation. Finally, the statistical significance of our results is evaluated using the **Mixed Effects Linear Regression** test.

(4) $(\mathbf{Fon} - \mathbf{Foavg}) / \mathbf{std}$ (where **Fon** is an Fo value (Hz), **Foavg** is the average **Fo** value (Hz) for a given AP, and **std** is the standard deviation for this average).

The values of F_0 for an entire AP are normalized, but only the z-scores of the tone targets are retained: those in the middle of vowels of open syllables and syllables ending with a non-sonorant consonant, and those in the middle of rhymes of closed syllables ending with a sonorant consonant. For our L1L2H* contour, this gives three measurements per AP, one per tone. These values are then compared between positions and between dialects.

2.3.2. SEMITONE TRANSFORMATION. Normalization by semitone transformation is used for the analysis of F_0 within a larger prosodic unit, the Melodic Phrase. The transformation of Hz values into semitones is done with **Prosogramme** software (Mertens 2004). When calculating tone values, this program takes into consideration the F_0 of vowels, their length and quality, and also the speed of tone change (glissando threshold) for different types of speech. Perceived pitch is constructed by the interpolation between two perceptually salient tone changes. Again, only values in the middle of tone targets are retained for our analysis. Unlike the z-score transformation, this procedure does not erase individual differences between speakers, but it allows us to evaluate potential perceptibility of identified differences.

2.3.3. MIXED EFFECTS LINEAR REGRESSION TEST. Intrinsic tone values and the differences between them (deferrals H*-L2, L2-L1, etc.), both in z-scores and semitones, are evaluated by using the statistical test **Linear Mixed Effect Regression Modeling**. The purpose of this test is to identify factors that cause variation and to see if tone and deferral values depend on the dialect, the position of an AP, or are random. Among the evaluated factors are: tone type, deferral type, dialect, position of an AP within an MP, and speaker. The test selected takes into consideration the different nature of these factors as well as the fact that data in certain cases are unbalanced, i.e. not all speakers have the same number of contours in all positions considered. Its purpose is to see if tone and deferral values depend on the dialect, the position of an AP, or are random. This test is done with the R software (<http://www.cran.r-project.org/>).

3. RESULTS.

3.1. ANALYSIS AT THE LEVEL OF ACCENTUAL PHRASE. In this section, combined results are presented for the 192 APs in QF (61 in POS1, 73 in POS2init, 22 in POS1-3, 22 in POS2, and 14 in POS3) and the 235 APs in FF (77 in POS1, 92 in POS2init, 17 in POS1-3, 30 in POS2, and 19 in POS3).

Table 1 presents average z-score values for tone targets in all five positions for both dialects. According to these results, the L1L2H* melody is realized as a descending-ascending contour in all five positions in both dialects. However, there is a noticeable discrepancy between curves in the realization of low tones. L1 tones are higher and L2 tones are lower in the Canadian variety than in the French dialect. For example, in POS2init the tone values in QF and FF are, respectively, -0.28 vs. -0.42 for L1 and -0.69 vs. -0.46 for L2. In POS1 tone values equal 0 vs. -0.39 (L1) and -0.85 vs. -0.67 (L2).

In a larger MP, L1 tone values equal -0.07, -0.12, and 0.36 in POS3, POS2, and POS1-3, respectively for QF. In FF they are -0.51, -0.33, and -0.38. L2 tone values in QF vary between

		MP of two APs		MP of three APs		
		POS2init	POS1	POS3	POS2	POS1-3
QF	L1	-0.28	0.00	-0.07	-0.12	0.36
	L2	-0.69	-0.85	-0.59	-0.85	-0.87
	H*	1.34	1.41	1.47	1.41	1.41
FF	L1	-0.42	-0.39	-0.51	-0.33	-0.38
	L2	-0.46	-0.67	-0.36	-0.47	-0.67
	H*	1.09	1.39	1.17	0.91	1.50

Table 1. Z-score values of tones in five positions considered.

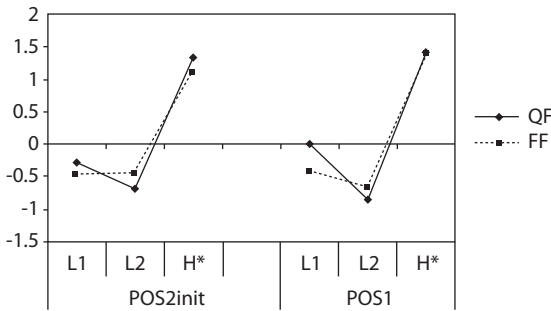


Figure 1. MP of two APs built from stylized contours.

-0.59 (POS3), -0.85 (POS2), and -0.87 (POS1-3), while in FF they are distributed between -0.36 (POS3), -0.47 (POS2), and -0.67 (POS1-3).

As for the H* tones, they have similar values in both dialects in POS1 (1.41 in QF vs. 1.39 in FF), but in POS2init, H* is higher in QF (1.34 vs. 1.09 in FF). As a result, in an MP with two APs, QF has an MP with two melodic peaks of the same prominence, while FF has a slightly larger final rise compared with the initial one.

In a larger MP all three H* tones are almost equal in their values in QF and we have three melodic peaks. Whereas in FF, the H* of POS3 has a modest value of 1.17, followed by an even lower H* in POS2 (0.91), and then by a very high H* in POS1-3 (1.50), thus giving a very noticeable final melodic rise. Equal H* tone values of APs within an MP may be interpreted as a heavier marking of an AP boundary in québécois dialect. In FF, on the contrary, modest values of initial APs and an emphasis on the final H* tone seems to suggest the marking of an MP boundary.

Stylized curves that correspond to the values in **Table 1** are given in **Figure 1** and **Figure 2** (overleaf), where APs are combined into stylized MPs.

The difference in implementation of low tones in the two dialects leads to deferrals between tones (L2-L1 and H*-L2) being regularly greater in QF (**Table 2**). For instance, in a shorter MP, the difference between initial low tones in this variety is -0.41 and -0.85 in POS2init and POS1, respectively; while in FF, the same deferrals are -0.04 and -0.28, respectively. The same

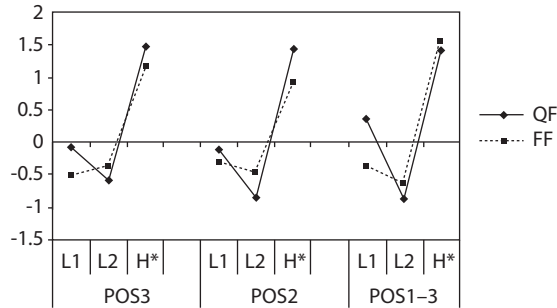


Figure 2. MP of three APs built from stylized contours.

		MP of two APs		MP of three APs		
		POS2init	POS1	POS3	POS2	POS1-3
QF	L2-L1	-0.41	-0.85	-0.52	-0.73	-1.23
	H*-L2	2.03	2.26	2.06	2.26	2.28
FF	L2-L1	-0.04	-0.28	0.15	-0.14	-0.29
	H*-L2	1.55	2.06	1.53	1.38	2.17

Table 2. Deferrals (z-score) between tones.

relationship is observable for the rest of the values in **Table 2**. Larger deferrals between tones give a larger span for F₀ in Canadian dialect.

The fact that L1 and H* tones are regularly higher in QF than in FF makes us question whether these two facts are related. To answer this, we have to consider the passage from the H* tone of the preceding AP (Prec AP) to the L1 tone of the following (analyzed) AP. This means that we have to move beyond the level of minimal prosodic unit and adopt another methodology for F₀ comparisons.

3.2. ANALYSIS AT THE LEVEL OF MELODIC PHRASE. Examining the passage from one AP to another reduces our analysis to APs that occupy non MP-initial positions: POS1, POS1-3, and POS2. APs in positions POS2init and POS3 are MP-initial, are often preceded by a pause, and do not have a preceding H* tone. In addition, crossing the MP boundary is beyond the scope of the present analysis.

The results of semitone transformations are similar to those of z-score conversions. In all three positions, the L1L2H* contour is realized in both dialects as descending-ascending (**Figures 3** and **4**), and even though these curves belong to different registers, the differences in realization of L1L2 are noticeable; the descent is steeper in QF data.

It is difficult to evaluate tone values in semitones because the curves appear in different registers; however, there are several observations that we can make about H* in particular, based on the data in **Table 3** (overleaf). Thus, in QF compared to FF, the final H* tones are closer in their values to the H* tones in the preceding AP, with one exception—

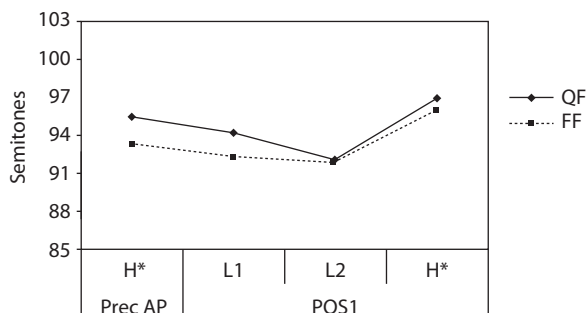


Figure 3. Stylized pitch based on average semitone values of the L1L2H* contour taken in the context of the preceding H* tone (POS1).

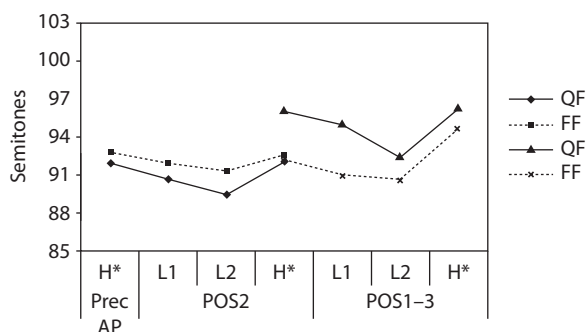


Figure 4. Stylized pitch based on average semitone values of the L1L2H* contour taken in the context of the preceding H* tone (POS1-3 and POS2).

POS2—where H* tones in FF are very close as well (93.49 s-t and 93.35 s-t in the preceding and the analyzed APs, respectively). In fact, the lower value of the final H* tone in POS2 gives the impression of a melodic dip in the middle of the MP containing three APs, and emphasizes the final peak (95.53 s-t, **Table 4**, overleaf) in the European variety.

This becomes more obvious when we compare tone deferrals (**Table 4**). Here, differences between H* tones of final and preceding APs are greater in FF in final positions POS1 and POS1-3: 2.53 and 2.70 s-t, respectively, against 1.38 and 0.37 s-t in QF in the same positions (in **Table 4** greater deferrals are highlighted.) The difference of -0.14 s-t between the H* tone in POS2 and the preceding H* tone in FF corresponds to the melodic dip that was mentioned above.

Overall, when we compare deferrals, we notice that the values are regularly greater in QF, with the exception of the final rise H*-L2 in POS1-3, which is slightly greater in FF (4.31 s-t vs. 4.14 s-t in QF), and deferrals H*-prech* in final positions POS1 and POS1-3 (2.53 s-t in FF vs. 1.38 s-t in QF; 2.70 s-t in FF vs. 0.37 s-t in QF, respectively). This confirms our previous observation about z-score values; in Canadian French greater deferrals between tones within an AP translate into a larger span, and smaller deferrals between high tones of two

		MP of two APs		MP of three APs			
		QF	FF	QF	FF	QF	FF
Prec AP	H*	95.58	93.42				
POS1	L1	94.29	92.37				
	L2	92.19	91.91				
	H*	96.96	95.95	92.54	93.49		
POS2	L1			91.17	92.57		
	L2			89.85	91.90		
	H*			92.72	93.35	97.05	92.83
POS1-3	L1					95.90	91.57
	L2					93.13	91.22
	H*					97.29	95.53

Table 3. Semitone values of tone targets for APs in POS1.

	MP of two APs		MP of three APs			
	POS1		POS2		POS1-3	
	FQ	FF	QF	FF	QF	FF
L1-prec H*	-1.29	-1.05	-1.37	-0.92	-1.04	-1.26
L2-L1	-2.10	-0.46	-1.32	-0.67	-2.73	-0.35
L2-prec H*	-3.39	-1.51	-2.69	-1.59	-3.77	-1.61
H*-L2	4.77	4.04	2.87	1.45	4.14	4.31
H*-prec H*	1.38	2.53	0.18	-0.14	0.37	2.70

Table 4. Deferrals (s-t) between tones.

neighbouring APs (H*-prech*), which are due to closer tone values, are interpreted as the presence of several melodic peaks within an MP, which gives a more modulated intonation in this variety. On the other hand, in European French smaller tone deferrals within APs and a greater difference between final high tone and the preceding one give a more compact span with less modulation.

In order to find out whether the differences observed in the realization of the L1L2H* contour are significant, we submitted our results to the **Mixed Effects Linear Regression** statistical analysis.

3.3. RESULTS OF THE STATISTICAL TEST. In this section, we present the results for the evaluation of the relationship between intrinsic tone values and deferrals (in z-scores and in semitones) and the origin of our speakers. In **Table 5**, which presents the results (*p*-values), significant values (*p* < .05) are highlighted.

	MP of two APs		MP of three APs	
	z-score	semitones	z-score	semitones
Intrinsic tone values	p = .236	p = .320	p = .251	p = .526
Deferral L2-L1	p = .008	p = .023	p = .005	p = .002
Deferral H*-L2	p = .010	p = .911	p = .008	p = .830
Deferral L2-preCH*		p = .005		p = .008
Deferral L1-preCH*		p = .535		p = .937

Table 5. Results of the test analyzing dialectal dependency of tone values and deferrals.

According to the results of this test, *p*-values for intrinsic tone values are very high (.236 and .251 for z-score values, and .320 and .526 for semitone values, for MPs that have two and three APs, respectively). This means that **tone values by themselves do not allow us to distinguish the dialects that are compared here**. On the other hand, very low *p*-values for the deferrals between tones indicate their strong dependency on the origin of the speakers. This relationship is particularly strong for the deferral L2-L1, which is significant in both production (z-score values) and perception (s-t values). And it is necessary to add that the dialect factor is the only one that affects our tested values.

4. DISCUSSIONS AND CONCLUSIONS. This study is based on recordings of 10 speakers, and a larger study is needed. However, the methodology adopted here points the way to a further study and suggests that the insights obtained from this initial investigation will most likely be replicated and confirmed when more data are analyzed. The analysis used helps to identify and evaluate dialectal markers of intonational variation in Canadian and European French on the basis of an analysis of the L1L2H* melody. Even though in both dialects this contour is realized as descending-ascending, there are differences that are observed between dialects; these are found at both prosodic levels considered here. At the level of the AP, the main distinction between dialects lies in a different implementation of low tones: L1 are regularly higher and L2 are lower in QF in comparison with FF. Differences that are found at the more global level of the MP are due to the development of F0 from one AP to another. Thus, because of the similar H* values of different APs, we observe several tone peaks in QF; while in FF, there is one final peak due to a greater H* value in the final AP. This seems to suggest that in FF, MP boundaries are more intonationally marked than AP boundaries, unlike in QF. Discrepancies in the implementation of low tones lead to greater deferrals between tone targets within an AP in QF, which translates into a more modulated intonation in this variety. And greater deferrals between H* and L2 tones in particular give a larger span in Canadian French. In this way, the origin of dialectal intonational differences between FF and QF reported in previous works becomes clearer.

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FORCE DYNAMICS AS A VARIATIONAL FACTOR: A CASE IN KOREAN

HYUN JUNG KOO
Sang Myung University

THIS PAPER EXPLORES¹ the linguistic utilization of the concept of force dynamics. Force dynamics is a mode of constructing the world in terms of entities interacting with respect to force (Talmy 1988, 1995). Since human construal of world events invariably involves the force dynamic relations among the event participants, force dynamics is thought to be pervasive in thinking and consequently in language, which mirrors our thoughts. This is well evidenced by the grammatical relations among the sentential arguments that represent force dynamic relations, such as causative, conjunctive, preposition, and modal aspects (Talmy 1988, 1995, Sweetser 1990). The focus of the present research, however, is on a more local level, i.e. the creation of variational forms in the lexis either through new word coinage or through modification of existing words, with particular reference to the uses of verbs that denote infliction of force, from a variation perspective. Though Korean exhibits an elaborate system of sound symbolism, which has received much attention since the pioneering study by Jung (1938), there has been no attempt to look at the issue from a variational perspective, and this paper intends to fill the gap.

1. ICONICITY BETWEEN PHYSICAL FORCE AND SEMANTICS. The concept of force dynamics is frequently reflected in lexicalization in the form of iconicity. This link is well attested in sound symbolism, a concept crucial for the discussion of the iconicity of physical force in language.

Korean has a very elaborate system of sound symbolism for consonants and vowels (Kim 1976, Kim-Renaud 1976, Martin 1962, *inter alia*).² As for the consonant sound symbolism, there are two kinds of forces with respect to articulatory gestures that bear sound symbolism: tensing and aspiration. For instance, if a consonant is tensed, it tends to imply a more localized and intensified force, and if a consonant is aspirated, it tends to imply a stronger exerted, but diffused, force. The concepts of tensing and aspiration are so systematically utilized in Korean that it has well-established Plain-Tensed-Aspirated tripartite correlational bundles in Korean consonants. The semantic contrast is shown in the following examples of onomatopoeic minimal pairs where such features serve as phonemic features.

- (1) Tensed: more localized and intensified force
[bog|bogɭ] e.g., water boiling in a small pot
[b'ogɭb'ogɭ] e.g., thick stew boiling

- (2) Aspirated: more strongly exerted, but diffused, force
 [jolanjolan] e.g., a colt walking behind its mother
 [tʰolanjtʰolan] e.g., a colt trotting along behind its mother

The foregoing exposition on sound symbolism, though cursory, shows that Korean uses sound symbolism in a productive way. As noted above, tensing and aspiration are the two mechanisms of sound symbolism that are of particular importance in a context of force dynamics reflected in Korean. The semantic characterization that tensing creates the meaning of more localized and intensified force and aspiration more strongly exerted, but diffused, force, is a direct reflection of exactly what is physically happening at the time of phonation, i.e., tensing as an articulatory gesture makes the muscles of the articulators tensed (*contra* laxed) by exerting extra forces, whereas aspiration delays the onset of voicing with a strong release of air puffs (*contra* unaspirated or unreleased). Therefore, tensing can be characterized as a localized force and aspiration as a diffused force in terms of both physical phonation and linguistic meaning.

With reference to these two valuable force dynamic notions, this paper shows that this force dynamic iconicity is attested in new word coinage, in slang expressions and in phonological modifications in emphatic uses, thus creating a large number of forms in lexical and phonological variations, the subject of the present research.

2. THE DATA OF THE PRESENT STUDY. Korean force-infliction verbs denote events in which force is inflicted in various ways resulting in various changes of the theme object. Some of them make reference to the local geography of the theme, presence or absence of friction, duration of such force-infliction events, etc. (Rhee 1996). The data are based on the lists of verb categories in National Academy of Korean (2002, 2003), excluding Sino-Korean words, morpho-syntactically complex words, and vowel-initial words. The literature-based data are supplemented by a brief student survey from college students whose first language is Korean, for newly coined slang expressions and tensed/aspirated variations of pronunciation of regular words.

2.1 FULLY LEXICALIZED CASES. The first category consists of words that are fully lexicalized. The following list of word pairs in (3) shows in contrast tensed vs. non-tensed minimal pairs (see Appendix 1 for more examples).³

- | | | | | |
|-----|--------|-----------------------------|---------|----------------------------------|
| (3) | [ga-] | 'go' | [k'a-] | 'peel' |
| | [gæ-] | '(weather) clears' | [k'æ-] | 'break' |
| | [səl-] | 'be half-cooked' | [s'əl-] | 'cut, shred' |
| | [ja-] | 'sleep' | [c'a-] | 'squeeze' |
| | [bæ-] | 'get smeared, get pregnant' | [p'æ-] | 'forcibly take out of, pull out' |

It is evident in (3) that the semantics of the non-tensed words tends to be relatively neutral to strong force, and the semantics of the tensed words tends to involve intensified, localized force. A similar pattern is observed in the case of aspiration, as shown in the examples of

word pairs in (4), the same state of affairs observed with the onomatopoeic word pairs in (1) and (2) (see Appendix 2 for more examples).

- | | | | | |
|-----|--------|---------------------|---------|------------------------------|
| (4) | [ja-] | 'sleep' | [tʰa-] | 'kick' |
| | [dəl-] | 'decrease, release' | [tʰəl-] | 'take off (dust)' |
| | [bul-] | '(wind) blow' | [pʰul-] | 'dissolve into, disentangle' |

The word pairs in (4) show the contrast of non-aspirated vs. aspirated minimal pairs. These words are semantically unrelated and they are fully lexicalized. A look at the list reveals that the semantics of the non-aspirated words tends to be relatively neutral to strong force, whereas the semantics of the aspirated words tends to involve strong, diffusive force.

As expected, however, this sound-meaning correlation with reference to tensing and aspiration is not a firm rule. There are unclear cases, and some of them may potentially be counter-examples, as shown in (5).

- | | | | | |
|-----|---------|----------------------|----------|-------------------------------------|
| (5) | [gal-] | 'grind' | [k'al-] | 'spread and cover, run over' |
| | [daji-] | 'mince, make firm' | [t'aji-] | '(enthusiastically) argue, protest' |
| | [jat-] | 'die down, decrease' | [tʰat-] | 'look for, find' |
| | [jwe-] | 'tighten' | [c'we-] | 'expose to fire/light' |

Though small in number (NB. there are a few more cases not listed here), the examples in (5) do not show semantic opposition in terms of force dynamics with reference to tensing and aspiration. For instance, [gal-] is 'grind' and [k'al-] is 'spread and cover, or run over'. Since grinding also involves force, whether [gal-] and [k'al-] really shows this contrast of force dynamics is not clear.⁴ Likewise, in the next pair of examples, [daji-] 'mince or make firm' and [t'aji-] 'enthusiastically argue or protest', raise similar concerns.

Another class of words consists of the tensed/aspirated words that signify involvement of strong force. These words, however, do not have non-tensed/non-aspirated counterparts and thus there is no semantic contrast through presence/absence of tensing or aspiration. A partial list of such words is in (6).

- | | | | | |
|-----|----------|--------------------|-----------|---------------------------|
| (6) | [k'ak-] | 'pare, peel' | [k'æmul-] | 'bite' |
| | [p'al-] | 'suck' | [p'æat-] | 'rob, take by force' |
| | [s'au-] | 'fight, struggle' | [s'at-] | 'pile up' |
| | [c'o-] | 'peck' | [c'odli-] | 'be pinched by' |
| | [tʰ'ai-] | 'get kicked (out)' | [tʰusɾU-] | 'rearrange; make orderly' |

As was the case with the previous examples, unclear cases exist. The examples in (7) involve tensing, which does not seem to involve a prominent force infliction sense. Likewise, the examples in (8) lack either tensing or aspiration, but still have a certain level of force infliction sense. Depending on the level of rigor for applying the rule, these may be simply conceived of as unclear cases or as counterexamples. However, it is noteworthy that the number of such cases is relatively small.⁵

- | | | | | |
|-----|-----------|-------------------------|------------|--------------------|
| (7) | [k'ædat-] | 'realize' | [k'əri-] | 'abhor, detest' |
| | [t'əna-] | 'leave' | [t'ədol-] | 'wander' |
| | [s'U-] | 'write; use; be bitter' | [s'Udadm-] | 'fondle' |
| | | | | |
| (8) | [garU-] | 'slice open' | [nak-] | 'fish out' |
| | [mwul-] | 'bite' | [muŋtʰi-] | 'make into a ball' |
| | [bak-] | 'drive into' | [bæt-] | 'spit out' |

2.2 VARIATIONAL CASES: REGULAR WORDS. The variational cases are of special import in the current research because these are the instances where the language users make purposeful manipulations on linguistic forms often 'against' the established norm of language use. The first of these are 'regular' variational cases, regular in the sense that the manipulative operation is directed to the regular words, as contrasted with the new word coinage for slang expressions to be addressed in the following section. The examples in (9) are those words that must be pronounced without tensing according to prescriptive grammar, which, however, are often pronounced with tensing in normal speech. The list in (9) incorporates the so-called standard pronunciation, the casual pronunciation, and the perceived, and/or alleged, semantic effect of tensing (see Appendix 3 for more examples).

- | | | | | |
|-----|-----------|--------------|------------------|------------------------------------|
| (9) | [gam-] | > [k'am-] | 'shampoo (hair)' | more finger-working, more thorough |
| | [gʊlg-] | > [k'ʊlg-] | 'scratch' | more force used |
| | [dadUm-] | > [t'adUm-] | 'trim, prune' | more finger force used |
| | [dak-] | > [t'ak-] | 'clean, cleanse' | more abrasion involved |
| | [sa(l)m-] | > [s'a(l)m-] | 'boil in water' | boil at higher temperature |
| | [jorU-] | > [c'orU-] | 'beg repeatedly' | more forceful and more tenacious |
| | [jumurU-] | > [c'umurU-] | 'knead, fondle' | more finger-working |

Despite condemnation by prescriptive grammarians, people often or normally pronounce the words in (9) with seemingly unnecessary tensing. Since the speakers know that they are supposed to say them without tensing, when asked why, they offer their rationale saying that there exist certain semantic differences between the non-tensed and tensed counterparts: the tensed counterparts suggest use of stronger force. For instance, [gam-] signifies shampooing one's hair, and [k'am-] signifies a shampooing event that involves more finger-work, and a more thorough job in washing the hair.

2.3 VARIATIONAL CASES: SLANG EXPRESSIONS. The next category consists of slang expressions. Generally speaking, slang expressions in Korean have a strong tendency to have tensed or aspirated consonants, with tensing more frequent. The immediate concern here is the cases where the ordinary non-tensed words have 'normal' meaning, whereas their tensed counterparts have become slang expressions, thus resulting in lexical divergence, resembling divergence of grammatical form (Hopper 1991) and 'splits' (Heine & Reh 1984), as shown in (10) (see Appendix 4 for more examples).

- | | | | | |
|------|----------|---------------|-----------|--------------------------------|
| (10) | [galgi-] | 'hit' | [k'algi-] | 'urinate, excrete' |
| | [danɡi-] | 'pull' | [t'ænɡi-] | 'dance, feel like drinking' |
| | [bətki-] | 'take off' | [p'ətki-] | 'take advantage of' |
| | [bek'i-] | 'copy' | [p'ek'i-] | 'plagiarize' |
| | [jarU-] | 'cut' | [c'arU-] | 'fire, dismiss' |
| | [jol-] | 'get reduced' | [c'ol-] | 'get intimidated, be scared' |
| | [jwe-] | 'tighten' | [c'we-] | 'be in financial difficulties' |

2.4 SLANG EXPRESSION WITH FORCE INFLICTION VERBS. Slang expressions in general tend to include tensed or aspirated sounds, as noted in the previous section. Similarly, even a cursory look at any lists of slang expressions reveals that they either involve force infliction verbs that contain tensed or aspirated sounds, or make new words featuring such sounds. For instance, the following list (11) illustrates force infliction verbs, e.g. [k'a-] 'peel', [tʰi-] 'hit', [k'i-] 'forcibly insert', [t'æri-] 'hit', and [c'ogæ-] 'split', being used as the main verb in the slang expressions (see Appendix 5 for more examples).

- | | | |
|------|--------------------|------------------------------------|
| (11) | exaggerate/lie: | [p'əŋk'a-], [p'əŋtʰi-] |
| | lie: | [ɡurak'a-], [ɡuratʰi-], [s'æŋk'a-] |
| | act too slowly: | [dwip'uk tʰi-] |
| | telephone: | [jənhwa t'æri-] |
| | send text message: | [munc'a k'a-] |
| | smile: | [c'ogæ-] |
| | be poor: | [biŋɡon t'æri-] |

2.5. NEWLY-COINED SLANG EXPRESSIONS. Use of newly-coined words as slang expressions also shows a similar strategy of using tensed and aspirated sounds, as illustrated in the examples in (12) (see Appendix 6 for more examples).

- | | | |
|------|------------------|---|
| (12) | stupid person: | [dolʰæŋi], [t'orai], [p'ik'u], [c'oda], [c'imp'a] |
| | be embarrassed: | [c'okt'anha-], [c'okpʰali-] |
| | imitation, fake: | [c'aktʰuŋ], [c'aga], [c'adæŋ] |
| | girl-friend: | [k'altʰi], [k'al], [ek'i] |
| | run away: | [tʰok'i-], [c'æ-] |

The use of such tensed and/or aspirated consonants in slang expressions seems to be motivated by the speaker's desire to add strong emotive force as a part of the semantics of the expressions. The reflection of force dynamics in these examples is on an abstract level. In this context it is noteworthy that the newly coined slang expressions are not necessarily force infliction verbs, but include verbs of experience and even nominals.

2.6 TENSING AND ASPIRATION IN GRAMMAR. There are cases that illustrate that the phonetic features, tensing and aspiration, are fully grammaticalized, i.e. they participate in development of grammatical morphemes. For example, the transivizer *-chi-* [-tʰi-],

developed from the verb *chi-* 'hit', and the transitivizer/causative *-hi-*, which is phonemically /hi/ but phonetically in most cases causes aspiration, are grammatical morphemes. In other words, the physical aspiration is used to add the meaning of causative force. Their uses are as exemplified in (13). The lexical source of [-hi-], however, has not been identified.

- | | | | | | |
|------|---------|-------------|---|------------|-------------------------------|
| (13) | [gURU-] | 'be wrong' | > | [gURUtʰi-] | 'make wrong (make a mistake)' |
| | [balg-] | 'be bright' | > | [balkʰi-] | 'enlighten, illuminate' |
| | [ib-] | 'wear' | > | [ipʰi-] | 'dress, make put on' |
| | [nəlb-] | 'be broad' | > | [nəlpʰi-] | 'broaden' |
| | [gut-] | 'be solid' | > | [guttʰi-] | 'make solid' |

As shown in (13), [gURU-] 'be wrong' becomes [gURUtʰi-] 'make wrong, make a mistake', and [balg-] 'be bright' becomes [balkʰi-] 'enlighten, illuminate' with the addition of the aspirated transitivizer *-chi-* and *-hi-*, respectively.

Another case of grammaticalized force involves the emphatical *-chi-*, also a development from the verb *chi-* 'hit', as shown in examples in (14).

- | | | | | | |
|------|----------|------------|---|-------------|-----------------------------------|
| (14) | [k'æ-] | 'break' | > | [k'ætʰi-] | 'break completely [emphatic]' |
| | [not-] | 'release' | > | [nottʰi-] | 'miss, drop fast unintentionally' |
| | [mil-] | 'push' | > | [miltʰi-] | 'push forcefully' |
| | [əp-] | 'overturn' | > | [əptʰi-] | 'overturn with force' |
| | [budit-] | 'collide' | > | [budittʰi-] | 'collide with force' |

The semantics of verbs with emphatic *-chi-*, as is evident from the examples given above, implies various meanings: (centrally) emphasis, crudity, haplessness (or uncontrollability), etc. For example, [k'æ-] 'break' becomes [k'ætʰi-] 'break completely', and [not-] 'release' becomes [nottʰi-] 'miss, fail to catch something after almost catching it, or drop something fast unintentionally'.

The next case is the ascension-marking prefix *chi-*, also derived from the verb *chi-* 'hit'. The words with this prefix have an added meaning of 'upwardness', or consequently, 'lifting forces', as shown in (15).

- | | | | | | |
|------|-----------|--------------|---|-----------|--------------------------------|
| (15) | a. [sot-] | 'soar' | > | [tʰisot-] | 'soar high up' |
| | b. [t'U-] | 'soar; open' | > | [tʰit'U-] | 'soar high up; raise eyebrows' |
| | c. [dat-] | 'run' | > | [tʰidat-] | 'run into in high speed' |

As is evident from its grammatical label 'ascension'-marking, the prefix *chi-* affixes to verbs of movement. For instance, [sot-] is 'soar', but [tʰisot-] is 'soar high up', with the involvement of a strong force implied and speedy ascension.

Likewise, the causative *-chu-* [-tʰhu-] implies the involvement of extra force, and the auxiliary *-echi-/achi-* [-ətʰhi-/atʰhi-], derived from the verb *chi-* 'hit', also adds a meaning of force to its modified verb, as shown in (16).

- (16) a. [nat-] 'be low' > [nattʃ^hu-] 'lower'
 b. [nUt-] 'be late' > [nUttʃ^hu-] 'slow down, postpone'
 c. [mol-] 'drive' > [moratʃ^hi-] 'drive forcefully'
 d. [bok-] 'stir fry' > [bok'atʃ^hi-] 'urge impatiently'

A caveat, however, is that language is not always uniformly simplistic and systematic. There are other causatives in Korean, like [-i-], [-ri-], [-gi-], [-u-] and [-gu-], mostly not very productive except for [-i-], that do not have to do with tensed/aspirated phonology and thus cannot be explained in the same way.

3. CONCLUSIONS. Many verbs of force infliction involve tensing and aspiration, and many speakers use tensing and aspiration for those verbs whose standard form involves neither of them, an excellent instance of sound symbolism and iconicity. From the preceding discussion the following generalizations have been found: (i) There often exist lexical 'splits': the non-tensed (standard) form remains for standard usage of verbal semantics, while its derived tensed (non-standard) counterpart is for slang use, (ii) Some of the verbs of force infliction have been grammaticalized into derivational affixes with various meanings, (iii) Many slang expressions consist of phrases involving verbs of force infliction; use newly coined words containing tensed/aspirated sounds; or use lexically split words containing tensed/aspirated sounds, and (iv) Force dynamics is a conceptually salient notion, and its linguistic representation is manifested both in grammar and in lexis, especially in lexical variations in slang expressions and other non-standard usage, in phonological variations for emphasis, and also in paradigmatic variations as a result of grammaticalization of derivative affixes.

¹ The author wishes to thank the anonymous reviewers for their detailed comments and suggestions. Special thanks also go to Seongha Rhee for comments on the earlier version of this paper, and to the students who collected the data and responded to the surveys. All remaining errors, however, are mine.

² Nyikos (1994, 2005) investigates the iconization of English vowels in the realization of verb tense and semanticized size perception.

³ Because of the space limitation, more extensive lists of examples in each category could not be provided. They may be obtained by contacting the author.

⁴ As a matter of fact, the same principle of sound symbolism does not seem to apply to the cases where a prolonged force infliction is involved, as instantiated by 'grinding' and 'stirring', as opposed to the instantaneous force infliction, e.g. 'peel', 'split', etc.

⁵ As an anonymous reviewer points out, the crucial thing about [munʃ^hi-] 'make into a ball' in the current discussion is the non-aspirated consonant in the first syllable rather than the aspirated consonant at the beginning of the second syllable.

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APPENDICES

1. Tensed vs. Non-tensed Minimal Pairs (in addition to the examples in (3))

[goi-] 'water flowing into (puddle)'	[sʉrəji-] '(gradually) die out'	[k'oi-] '(fish) teem with'
[gi-] 'crawl'	[jæ-] 'measure'	[k'i-] '(forcibly) insert'
[dali-] 'run, be hanging (light)'	[ji-] 'fall, lose'	[t'ali-] 'have sth. heavy hanging behind'
[dʉt-] 'hear'	[jirʉ-] 'let start, release'	[t'ʉt-] 'pluck, tear apart'
[sa-] 'buy'	[jit-] 'bark'	[s'a-] 'urinate/excrete with force'
[sul-] 'get affected by (rust/mold)'	[gwe-] 'prop up'	[s'ul-] 'sweep through'
	[dəl-] 'decrease'	[c'ot-] 'chase'
[jot-] 'follow'	[de-] 'get scalded'	
	[buri-] 'let, release'	[s'ʉrəji-] 'fall down, get struck down'
	[go-] 'slow-cook, simmer'	

[c'æ-]	'cut open'	[c'it-]	'tear apart'	[t'e-]	'take off from,
[c'i-]	'steam thoroughly	[k'we-]	'pierce through'		detach'
	to cook'	[t'əl-]	'shiver'	[p'uri-]	'scatter'
[c'irU-]	'stab, poke into'			[k'o-]	'twist'

2. Aspirated vs. Non-aspirated Minimal Pairs (in addition to the examples in (4))

[jæu-]	'put to sleep'	[tʰæu-]	'fill up with'	[pʰiu-]	'burn (cigarette),
[jiu-]	'erase'	[tʰiu-]	'displace, throw		spread (smell)'
[dul-]	'lift'		away'		
[biu-]	'empty (glass)'	[tʰul-]	'twist'		

3. Prescriptively Non-Tensed Words but Pronounced with Tensing (in addition to the examples in (9))

[gærik'i-]	>	[k'ærik'i-]	'dislike, shun from'	stronger negative feeling
[gugi-]	>	[k'ugi-]	'crumple'	more force used
[gup-]	>	[k'up-]	'cook, roast'	more thoroughly
[guul-]	>	[k'uul-]	'get scorched'	more burning/scorching
[gut-]	>	[k'ut-]	'draw (line)'	more force used
[giul-]	>	[k'iul-]	'get inclined'	more urgency in situation
[giuri-]	>	[k'iuri-]	'tilt'	more force required/used
[dalh-]	>	[t'alh-]	'wear out'	more wear and tear
[dudri-]	>	[t'udri-]	'hit repeatedly'	more force used
[dudlgi-]	>	[t'udlgi-]	'hit repeatedly'	more force used
[pura't'ri-]	>	[p'ura't'ri-]	'break (bone, stick)'	more damage ensued
[burəji-]	>	[p'urəji-]	'get broken'	more complete damage
[pusu-]	>	[p'usu-]	'destroy'	more force used, more damage
[puli-]	>	[p'uli-]	'marinate, soak'	more increase in volume
[but'l-]	>	[p'ut'l-]	'get hold of'	more force used
[sək-]	>	[s'ək-]	'mix'	more force used
[jaru-]	>	[c'aru-]	'cut'	more force used
[jəlɶlmæ-]	>	[c'əlɶlmæ-]	'be at a loss'	more bewilderment
[joradl-]	>	[c'oradl-]	'gradually dry up'	resulting in less water volume
[jul-]	>	[c'ul-]	'shrink'	higher degree of shrinkage
[juri-]	>	[c'uri-]	'cut down on'	more drastic decrease
[juŋəlgəri-]	>	[c'uŋəlgəri-]	'speak unclearly'	more grudge

4. 'Standard'-Slang Lexical Splits (in addition to the examples in (10))

[dali-]	'lack'	[t'ali-]	'be stupid, lack, be ugly'
[giutgəri-]	'look around'	[k'iutk'əri-]	'try to seduce'
[dudlgi-]	'hit repeatedly'	[t'udlgi-]	'eat to heart's content, party (v)'
[bæ't'i-]	'withstand'	[p'ət'i-], [p'ət'ingi-]	'resist order, reject request'
[pok-]	'fry'	[p'ok-]	'give hard time to'
[busu-]	'break, destroy'	[p'ogæ-]	'conquer, master'
[butjap-]	'take hold of'	[p'utjap-]	'hold on to (someone's hair) in fight'
[butjapʰi-]	'get caught'	[p'utjapʰi-]	'become unable to escape'
[saraŋha-]	'love'	[s'araŋha-]	'be crazy for, love intensely'

[jəl-]	'get soaked/pickled' [c'əl-]	'get addicted to (drug, cigarette..)'
[joi-]	'tighten' [c'oi-]	'give stress to'

5. Slang Expressions with Force Inflection Verb (in addition to the examples in (11))

cut classes: [t'æŋt'æŋi k'a-], [t'æŋt'æŋi t ^{hi} -]	be nosy: [k'ops'ari k'i-]
embarrass: [gol t'æri-]	hide: [k'obult ^{hi} -]
drink (liquor): [k'æk-]	stay awake overnight: [nalbam k'a-]
take money: [nosang k'a-], [p'ij t'ut]	idle-talk: [nogari k'a-]
coin-gambling: [p'ækt ^{hi} igi]	get separated/divorced: [sæŋ k'a-]
hit-rob-and-run: [p ^h ækt ^{hi} igi]	

6. Newly Coined Slang Expressions involving Tensing/Aspiration (in addition to the examples in (12))

policeman: [c'aps'æ]	finish: [p'ojak næ-]	back-stage dancer:
duel, fight: [matc'an]	sorry: [t'ik'æp-]	[p'ækk'ari]
very: [dæt'a]	get angry: [c'ajna-]	drunkard's talk: [k'ojaŋ]
ignore: [s'ip-]	ostracized person: [waŋt'a]	fella: [s'æk'i]
older generation: [not'an]	high-school graduate:	face: [s'ajp ^h ant'egi]
save: [c'ajbak-]	[gop'iri]	lose: [k'ol-]
ugly: [hic'ugri]	teacher-in-charge:	quarrel: [s'ibi-]
salvager: [c'iks'æ]	[damt ^h æŋi]	fight back: [k'adæ-]
nightclub attendant: [p'ik'i]	novice: [t ^h oc'a]	be unhappy: [k'op-]
lack: [k'uli-]	regrettable: [k'abi]	style: [p'odæ]
anniversary party: [p'aj]	be overwhelmed: [p'yoŋ ga-]	guy: [c'asuk]
be gorgeous: [s'ækk'Unha-]	motor-cycle: [p'yoŋk'a]	punishment: [p'æŋp'æŋi]
head, chief: [c'aj]	be good: [s'ambakha-]	mistake: [p'iks'al]
watch for others: [c'ajbo-]	genuine: [jint ^h uŋ], [jint ^h æŋ]	virgin: [s'æa]
vow: [æmt ^h aj]	frighten: [huk'asi megi-]	money: [c'ən]
be knowledgeable:	light: [t'agari]	with one blow: [wənp'an]
[p'asakha-]	unbecoming act: [k'olk'ap]	get revealed: [p'orok na-]
influence, power: [k'utp'al]	helper, subordinate:	good-for-nothing: [k'odæŋi]
army, infantry: [t'anj'æ]	[k'obon]	courage, guts: [k'andagu]
assistant: [t'ak'ari]		obtain/steal: [s'ebi-]



MS. AS A COURTESY TITLE: VARIATION THROUGH TIME AND SPACE

DONNA L. LILLIAN
East Carolina University

DURING THE 1970s, feminists promoted the use of *Ms.* as a courtesy title for women, with the intention that it become a replacement for both *Miss* and *Mrs.* and be used in a manner parallel to *Mr.*, revealing nothing about a person's marital or family status. While many women did adopt *Ms.* for themselves and many people undertook to use *Ms.* when addressing women, the term has never been consistently used or understood as it was intended. A 1986 survey of 325 people showed that many people resisted using *Ms.*, and when they did use it, they seldom used it as it had been intended (Atkinson 1987).¹ Instead, it was used only for certain sub-categories of women, such as young career-oriented women and divorced women. A subsequent survey of 247 participants (Lillian 1995) revealed that *Ms.* was most consistently used of older women, of lesbians, and of separated or divorced women. In 1986, 20% of women reported that they always or often used *Ms.* of themselves, while in 1995 that figure had risen to only 23%.

The present paper reports on a new study, currently underway. Making use of technology not previously available, this study gathers survey data on-line as well as through traditional paper surveys, thus allowing me to collect data from a wider geographical area. Whereas *Ms.* was once closely associated with feminists and with the feminist movement, I predict that it no longer carries a strong feminist connotation. Rather, as a result of the conservative backlash against feminism during the 1990s and into the new millennium, preliminary results suggest that *Ms.* has largely been co-opted by the mainstream and turned into a tool for more precisely identifying a woman's marital status, rather than as a tool for avoiding identification of a woman's marital status through courtesy titles.

1. PREVIOUS STUDIES. Most studies of *Ms.* have looked at people's perceptions or stereotypes of women who use *Ms.* and at self-reporting on whether people use *Ms.* of themselves. Collectively, these studies reveal a widespread perception that women who use *Ms.* are more career-oriented, assertive, independent, and feminist than their counterparts who use *Miss* or *Mrs.* (see Atkinson 1987, Connor *et al.* 1986, Davy 1978, Dion 1987, Dion & Cota 1991, Dion & Schuller 1990 and 1991, Feather *et al.* 1979, Heilman 1975, Jacobson & Insko 1984). In the largest study to date, and the only one which explicitly looks at data by race, Murray (1997) reports that while White respondents stereotype women who use *Ms.* as independent, unfriendly, unattractive, feminist, outspoken, unlikely to make a good wife or mother, prone to work outside the home, not as apt to enjoy cooking or going to church, African American respondents do not see any difference between women addressed with *Ms.* and women addressed with *Miss* or *Mrs.*

Of those people who used *Ms.* at least some of the time, many report that they use it primarily in business contexts, particularly when they do not know the marital status of the woman they are addressing, and that they use *Miss* or *Mrs.* in other situations. Given these findings, the survey reported on in Lillian (1995) was framed within a business context. Subjects were given brief descriptions of 15 women customers and were instructed to select from the choices listed how they would address a letter to the customer. All selections included a choice between *Ms.*, *Miss* and *Mrs.*, and some also included variations in surnames, as illustrated by the following sample scenario.

(1) **Elaine Parker is a 35-year-old lawyer, married to Alex Wilson.** (Circle one.)

Miss Parker	Ms. Parker	Mrs. Parker
Miss Wilson	Ms. Wilson	Mrs. Wilson

The attributes given for the women in the scenarios included variations in age, marital status, real or perceived feminist affiliation, sexual orientation, and employment status. The prediction was that if *Ms.* were favoured in business and if it were being used and understood as feminists had intended, then all answers to all scenarios should have been *Ms.* The 247 participants each responded to 15 scenarios, yielding a total of 3705 possible uses of *Ms.* There were, however, just 2058 actual uses of *Ms.*, for an overall total of 55.5% of answers using *Ms.* The comments of the subjects reveal a range of understandings of how to use courtesy titles, but a recurring theme suggests that *Mrs.* functions as a badge of honour, signaling married status, and that it is therefore preferred over *Ms.* for married women. Apparently, being married is still the most valued status for women and many of them want to advertise it through their use of courtesy titles. Overall, the data suggest that people employ a three-way distinction among courtesy titles for women, with *Miss* marking the woman as young and available, *Mrs.* as currently married, and *Ms.* as any other status, including separated, divorced, widowed, living common-law, and for some people, lesbian, or young and unmarried. In Lillian (1995), the most notable change from Atkinson (1987) is that women using *Ms.* are no longer stereotyped as young. Rather, they are generally deemed to be older, although there is no general agreement on exactly what age constituted older.

2. THE SURVEY. The current study uses a questionnaire very similar to that used in Lillian (1995). The 15 scenarios are the same, but the direct elicitation section includes more questions about the subjects' own background, including questions about age, sex, sexual orientation, race, religion, marital status, occupation, and place of residence. It also includes direct questions about subjects' use and understanding of *Ms.* and their views of feminism, and asks how they feel about the preference by some people to do away with courtesy titles completely in favour of just using addressees' first and last names. The latter question was included because a subset of respondents in both Atkinson (1987) and Lillian (1995) reported such a preference. In the present paper, I have not yet analyzed the qualitative data on feminism or the preference not to use any titles, although a preliminary examination of the data suggests that a majority of people still favour at least some use of courtesy titles.

Scenario	1995	2006	Pilot	Female	Male	Fem.	Non-Fem.
n=	247	2158	49	1472	306	978	982
#1 (23, student, common-law)	59.5	80.1	69.3	81.1	76.8	89.0	74.7
#2 (35, lawyer, married, kept surname)	38.0	66.9	8.1	69.8	56.8	78.2	62.8
#3 (19, single mom, no partner)	62.3	82.3	73.4	83.2	79.1	90.3	76.9
#4 (38, homemaker, married, 3 kids)	18.2	36.5	6.1	37.7	10.3	49.6	29.4
#5 (17, high school, lives with parents)	28.3	43.4	32.6	43.3	46.7	54.2	36.9
#6 (57, widow, shelter volunteer)	43.7	50.9	42.8	51.4	50.3	61.3	44.1
#7 (married, hyphenated surname)	22.2	50.7	8.1	52.2	45.5	64.3	47.6
#8 (42, stock broker, lesbian)	72.8	90.5	81.6	91.9	84.4	95.8	88.3
#9 (63, retired teacher, never married)	63.1	78.5	79.5	79.6	74.2	86.6	74.1
#10 (27, heavy equipment operator)	65.5	84.7	77.5	85.8	81.7	91.6	80.6
#11 (43, common-law, kids, hyphenated)	56.6	82.9	61.2	86.1	76.6	90.3	81.9
#12 (29, single, bank, will keep name)	67.6	84.9	69.3	86.3	80.4	92.3	81.4
#13 (83, living alone)	69.6	81.8	85.7	83.0	77.5	87.1	78.3
#14 (34, separated, resumed birth name)	81.7	92.1	81.6	93.9	86.9	96.4	90.6
#15 (52, divorced, feminist activist)	83.4	93.0	81.6	94.4	87.9	96.9	90.4
Total (all scenarios, all subjects)	55.5	73.8	57.2	74.6	67.6	81.6	69.2

Table 1. *Percent of Answers Using Ms.*

In order to obtain a wider sample of respondents, I created an online version of the survey, using the SurveyMonkey web site (www.surveymonkey.com). I advertised the survey on a number of academic listservs, including those of The Linguist List, IGALA (International Gender and Language), FLING (Feminists in Linguistics), and the American Name Society. In addition, I sent an email notice to all of my email correspondents, encouraging them to answer the survey themselves and to circulate it to as many other people as they could. Within the first three weeks, I had collected 2158 responses and it is on those responses that the current paper reports. Respondents to the on-line survey come from around the world, although most are from North America. Not all 2158 respondents answered every question, so when subsets of the data are analyzed, the numbers do not always add up to 2158. For example, 1472 people identified themselves as female and 306 as male, which means that fully 380 people did not identify as either.

3. RESULTS. **Table 1** shows the percentage of responses using *Ms.* in Lillian (1995) and in the current study. The column labeled 2006 gives the total figures, which are then broken down in subsequent columns into figures for subjects identifying as female, male, feminist

and non-feminist. When the 2006 totals for the 15 scenarios are compared directly to the totals from Lillian (1995), several patterns emerge. Overall, use of *Ms.* in these scenarios has risen from 55.5% to 73.8%, an increase of 18.3%. In fact, for every scenario, there has been an increase in use of *Ms.*, ranging from 7.2% for scenario #7, up to 28.9% for scenario #2. The three scenarios showing the highest rate of increase, at 28.9%, 28.5% and 26.3%, respectively, are #2, involving a 35-year-old lawyer who married and kept her own surname, #7, involving a married woman who hyphenates her surname, and #11, involving a 43-year-old with children, living common-law, with a hyphenated surname. Atkinson (1987) found a positive correlation between women who retained all or part of their surname and those who used *Ms.*, and the data for scenarios #2, #7, and #11 suggest that this tendency is continuing and even strengthening. Nevertheless, while these scenarios show the highest rates of increase, they do not represent the highest overall use of *Ms.* in the data.

The ranking among the scenarios in terms of rates of *Ms.*-use changed between 1995 and 2006, but scenarios #15, #14, and #8 continue to be ranked 1, 2, and 3, respectively. Fully 93.0% of people used *Ms.* for #15, a 52-year-old divorced feminist activist, 92.1% used *Ms.* for #14, a 34-year-old who separated from her husband and then resumed using her birth name, and 90.5% used *Ms.* for #8, a 42-year-old lesbian stockbroker. The fact that two of these three involve separation or divorce confirms earlier findings that people often consider *Ms.* appropriate for divorced or separated women. Since being a lesbian is also part of the stereotype of women who use *Ms.*, these findings tend to confirm that. The next highest ranked scenarios in 2006 are #12 (29-year-old, single, bank employee) at 84.9% and #10 (27-year-old, single, heavy equipment operator) at 84.7% (ranked 5th and 6th in 1995, behind scenario #13). At first this finding may seem surprising, given that Lillian (1995) found that *Ms.*-users were stereotyped as being older, but qualitative data suggest that there is still a prevailing expectation that women will marry in their early 20's, so women in their late 20's who are independent and single may fit the popular criteria for use of *Ms.*

Equally instructive are the scenarios in which subjects show the lowest rates of use of *Ms.* In both 1995 and 2006, scenario #4 yielded the lowest rates of *Ms.*-use (18.2% and 36.5%, respectively). This scenario describes a 38-year-old woman who is married with 3 children and who is a full-time homemaker. Overwhelmingly, people use *Mrs.* as the preferred address form for her. This woman fills the idealized role of stay-at-home mom and appears to be as far from the stereotype of independence and feminism associated with *Ms.* as one is likely to get. Time after time, both in formal surveys and in informal discussions with non-academics, people report just such a role as the quintessential accomplishment for women, to be recognized and signaled by the use of the honorific *Mrs.* The 14th-ranked scenario (ranked 13th in 1995) was #5, involving the 17-year-old high school student. In general, respondents tend to address her using *Miss*, perhaps both because of her age and her single status. Scenarios #6 and #7 were very close at 50.9% and 50.7% respectively. In #6, the woman's status as a widow seems, on the one hand, to suggest conformity with the norms for women to marry and this is expressed through a high rate of use of *Mrs.* for her, and on the other hand to suggest that her status as no longer married makes her similar to divorced or separated women. Her age, 57, may also have influenced people to use *Ms.* for her, a point which is addressed below, when the independent variable age is discussed. In

scenario #7 the woman is married but has hyphenated her name. This apparent conflict between the traditionalism of marriage and the non-traditionalism of *Ms.*-use may explain the split result in this scenario.

On their own, the mid-ranked scenarios show nothing particularly remarkable. More interesting are the results when the responses of males and females are compared to one another and to the aggregate results. The results for males are lower than those for females for every scenario except #5, the 17-year-old high school student, for which males use *Ms.* at a rate of 46.7%, while females use it at a rate of just 43.3%. My preliminary examination of the data has not revealed any conclusive reason for this difference, but it may be that for males, the feature of singleness slightly outweighs that of age. Apart from this difference, there is consistency between males and females in their ranking of the scenarios, and the ranking corresponds closely with that observed above for the aggregate data. Specifically, the highest-ranked scenarios are #15, #14, and #8, and the lowest-ranked is #4, with #5, #6, and #7 in the next 3 positions. The higher rate of *Ms.*-use by females may suggest that as women, the option of using *Ms.* has greater significance or usefulness than it has for men. Further examination of the qualitative data may reveal more robust explanations.

It is not surprising that feminists use *Ms.* at a higher rate than non-feminists, namely 81.6% versus 69.2%, given that *Ms.* was originally a feminist linguistic innovation and it still carries positive feminist connotations for at least some people. Feminists use *Ms.* more than non-feminists in every scenario, but there is one minor shift in ranking from the order seen in all the other data thus far. Specifically, for non-feminists, scenario #14 narrowly edged out #15 for the top-ranked spot (90.6% versus 90.4%). Once the data gathering has been completed and tests for statistical significance have been carried out, this difference may prove insignificant. Of greater interest, perhaps, is the high level of consistency in the rankings of the other scenarios. Once again, #15, #14, and #8 are the top three, and #4, #5, #6, and #7 are the lowest ranked (in that order, from lowest upward).

Table 2 (overleaf) shows the rates of use of *Ms.* by age category of subjects. Subjects were asked to identify their age according to one of the following age groupings; 16–19, 20–29, 30–39, 40–49, 50–59, 60–69, 70–79, 80+. There is a lot of disparity in the numbers of respondents in each age category, with a particular shortage of older respondents in the 70–79 group (22 respondents) and in the 80+ group (3 respondents). Continued data gathering will focus on recruiting more participants from these age groups. Meanwhile, even allowing for the small amount of data for these groups, an interesting pattern of age grading is revealed by the data. The overall rate of use of *Ms.* rises with each age category, peaking with the age 50–59 group and then falling off in each successive group. The figures by decade are 59.5%, 68.8%, 74.1%, 78.4%, 80.8%, 76.8%, 66.7% and 60%. This rising and falling pattern is imitated, with only small deviations, for every individual scenario. For scenarios #1, #2, #3, #4, #5, #6, #7, #10, #11, #14, and #15, the peak is with the 50–59 year-olds, with the drop beginning with the 60–69's. For #8 (lesbian stockbroker) the pattern peaks with the 40–49's and drops slightly beginning with the 50–59's. For scenario #12 (29, single, bank employee), the pattern peaks with the 60–69's, then drops with the next group. For scenario #13, the drop begins earlier, with the 30–39 group. Respondents' reluctance to use *Ms.* for this 83-year-old living alone may be consistent with their experience of older women often preferring

Scenario	16-19	20-29	30-39	40-49	50-59	60-69	70-79	80+
n=	67	627	549	332	306	146	22	3
#1 (23, student, common-law)	61.2	75.1	80.6	84.3	88.2	87.0	81.8	66.7
#2 (35, lawyer, married, kept surname)	35.8	54.4	70.3	78.2	82.1	80.1	59.1	0.0
#3 (19, single mom, no partner)	58.2	76.4	82.6	87.9	90.9	90.4	86.4	66.7
#4 (38, homemaker, married, 3 kids)	14.9	25.5	39.1	47.4	50.0	40.4	31.8	0.0
#5 (17, high school, lives with parents)	25.4	36.5	43.4	50.2	56.2	47.3	36.4	33.3
#6 (57, widow, shelter volunteer)	43.3	47.2	51.6	54.4	58.2	49.3	45.5	33.3
#7 (married, hyphenated surname)	25.4	35.8	52.0	62.2	71.9	58.3	45.4	33.3
#8 (42, stock broker, lesbian)	79.1	88.5	90.5	94.3	93.2	91.8	90.9	100.0
#9 (63, retired teacher, never married)	82.1	81.7	81.0	77.6	74.2	71.9	54.5	66.7
#10 (27, heavy equipment operator)	65.7	82.5	83.8	90.0	91.8	89.0	72.7	100.0
#11 (43, common-law, kids, hyphenated)	77.7	80.1	82.3	90.7	91.8	87.7	86.3	33.3
#12 (29, single, bank, will keep name)	65.7	82.9	84.3	89.7	90.8	91.1	68.2	66.7
#13 (83, living alone)	83.6	84.2	85.4	80.4	78.1	76.0	63.6	100.0
#14 (34, separated, resumed birth name)	86.6	90.2	92.5	95.6	96.8	96.6	86.4	100.0
#15 (52, divorced, feminist activist)	88.1	91.7	93.1	93.4	97.7	95.6	90.9	100.0
Total (all scenarios, all subjects)	59.5	68.8	74.1	78.4	80.8	76.8	66.7	60.0

Table 2. *Percent of Answers Using Ms., by Age*

either *Miss* or *Mrs.*, in accordance with what they see as traditional usage. It is possible that some similar judgement is being made with respect to the 63-year-old never-married retired school teacher in scenario #9. In what is a reversal of the trend otherwise noted, the youngest age group was the most likely to address her using *Ms.* with each subsequent age group less and less likely to use *Ms.* for her.

The fact that the highest rates of *Ms.*-use occur in the 50-59 age bracket is perhaps not surprising. These people were, after all, in young adulthood when feminists began popularizing *Ms.* They were in on the ground floor, as it were, in spreading the use of *Ms.*, and even if they did not all embrace it for themselves, they were the most likely group to understand its original, intended meaning. The fact that use of *Ms.* decreases as one looks at younger and younger age brackets could mean one of two things. On the one hand, it could suggest that feminists are losing ground with respect to having *Ms.* take over and replace both *Miss* and *Mrs.* This hypothesis gains some support from the fact that the 1995 and 2006 figures for 16-19 year-olds are fairly close (55.5% and 59.5% respectively). These figures are also close to those obtained in a 2006 pilot test of the questionnaire using 49 undergraduate students as respondents. The pilot group had an overall rate of 57.2% *Ms.*-use for the 15

scenarios. On the other hand, even for the youngest groups in 2006, rates of use of *Ms.* are still higher than the overall figures were in 1995. Thus, an alternative explanation might be that some of the issues raised by the use of *Ms.* become more relevant as one moves through adulthood and are the most salient when one is at the peak of one's career. Thus, as people mature they might see more use for the term *Ms.* and they might increase their use of it. Follow-up studies in the coming decades will resolve these questions more conclusively, but in the interim, analysis of the qualitative data gathered in the current survey may shed further light on the question of why there is such a marked pattern of age ranking.

4. CONCLUSION. The results of the present study are still preliminary, since data gathering is continuing at the time of this writing. When the data are complete, the analysis will include an examination of possible effects of nationality, region, and ethnicity, as well as the variables of age, sex, and feminist orientation discussed here. All the quantifiable data will be subjected to tests for statistical significance and the qualitative data will be analyzed and interpreted. Thus, all conclusions at this juncture are preliminary and may be subject to subsequent reinterpretation. Nevertheless, even with those caveats, it is possible to make some preliminary observations about the use of *Ms.* First, although overall rates of *Ms.*-use have increased over the decade between 1995 and 2006, women are still more likely than men to address women using *Ms.*, feminists are more likely than non-feminists to address women using *Ms.*, and people in their middle years are more likely than either younger or older people to address women using *Ms.* Second, there is a high degree of consistency across age, sex, and feminist orientation categories in terms of the characteristics likely to induce people to address a woman using *Ms.* Specifically, a woman is more likely to be addressed with *Ms.* if she is divorced, separated, or widowed, if she is a lesbian, or if she is single and past the age of about 25. A woman will seldom be addressed as *Ms.* if she is a married homemaker living a stereotypically traditional lifestyle. In fact, the scenario describing such a woman is consistently ranked lowest by all demographic groups examined. Other low-ranking scenarios involve a married woman, a widow, and a single teenager.

Feminists introduced *Ms.* as a term to be parallel to *Mr.*, to be used for all women, regardless of race, age, sexual orientation, marital status, or political affiliation. Almost since its beginnings, *Ms.* has met with opposition. Part of the opposition may be due to a form of linguistic conservatism, a curmudgeonliness about any observable changes in the language. However, in spite of a general reticence on the part of some people to alter traditional address forms, *Ms.* is being used at an increasing rate. Unfortunately, it is being used in a manner that is almost the complete opposite of its intended usage. Instead of eliminating personal information about a woman's marital status in her courtesy title, *Ms.*, as it is currently being used, actually increases the amount of personal information being disclosed about a woman. Clearly, society still places a very high premium on disclosing personal details about a woman's status in the world, while still apparently maintaining the double standard that allows men to conceal all such details through the common designation, *Mr.*

¹ This paper was published under my former surname, Atkinson. In 1990, I legally changed my surname to Lillian, in honour of my grandmother, Lillian Alice (Meades) Atkinson.

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VARIATIONS IN FOOD NAMES

ALAN K. MELBY & ALEC WESTWOOD

Brigham Young University, Provo

THERE ARE SEVERAL WAYS that names for food items (fruits, vegetables, fishes, dishes, etc.) can vary across geographical regions. First of all, a food name can be commonly used in one region but not in another. In this case, either the same food item can be found in both regions but under different names, or the food item itself can be regional and rarely if ever found in other regions. If the item is found in both regions, we are dealing with synonymy in food names. Another type of food name variation occurs when a food name is used in two regions with a distinct meaning in each region. Here we are dealing with ambiguity in food names. This study is concerned with both synonymy and ambiguity in food name variation. The other type of variation that must be considered is where a food item itself, not just its name, is regional in that it is unknown or practically unknown in another region. The underlying, long-term objective of the project is to establish a methodology for identifying regional food name variations that can be used to establish baselines. These baselines can then be used as starting points in longitudinal studies of food name variation. However, the focus of this paper is to report on one baseline study that has been conducted concerning food name variation within French.

Before describing the baseline study, we must broach the question of what kind of geographical boundary to use: regions within a country or, alternatively, national boundaries. We started out looking at regions within the United States. A web page was set up that allowed individuals to report regional variations in food names, and we sent out a notice on an e-mail list of linguists inviting on-line submissions. When we received practically no submissions, we re-evaluated our approach. Discussions with several people in different parts of the United States revealed that they were uncertain of how food names might differ in other regions. Although they may have noticed variations immediately upon their arrival in a new region, they quickly adapted to the local dialect. Claims by respondents concerning whether a food name is regional were found to be unreliable. For example, a respondent from Indiana claimed that *filbert* is used in Indiana for the nut that the rest of the country calls a *hazelnut*. However, the website <http://www.filbertfestival.com/> (accessed August 3, 2006) describes a festival in Springfield, Oregon, to celebrate the filbert. The website, states 'Filberts & Hazelnuts are the same nut!', so, clearly, *filbert* is used outside of Indiana.

RESEARCH IN THREE LANGUAGES. During the re-evaluation of the data-gathering approach within the United States, the second author, Alec Westwood, was conducting a food name variation study within the Czech Republic. Thanks to a workshop that he taught to several groups of locals, he was able to ask about food name variations. He used the well-known example of English synonymy between *pancake* and *flapjack*, and asked

for similar examples in Czech. After asking dozens of people directly and receiving no examples in Czech, a different approach to eliciting food name variation data was used. A game was played that required locals to think of names for a given food item in as many languages as possible. This seemed to unlock people's mental lexicon, and locals came up with some variations, such as *karotka* vs. *mrkev* for carrot between the city of Brno and the city of Znojmo in southern Moravia. However, even then, most variations turned out to be simply diminutive forms, such as *rajcate* vs. *rajce* for tomato. We even tried an approach in which a survey was delivered to everyone in an apartment building. People were happy to try to help, but after several weeks, when surveys were picked up, they provided practically no examples of food name variation. Many locals suggested that the Czech Republic was too small a country to have food name variations.

In the meantime, networking brought contact with Orlando Alba, a professor at our university who had done some research in lexical variation in the Spanish-speaking world. We explained to him our frustration in finding food name variation within the United States and within the Czech Republic. He responded that he was not surprised. He had found in his own research that while there is substantial lexical variation among Spanish-speaking countries, there is relatively little variation within a country. He suggested that the main reasons for uniformity within a country are communications within the country (national television and radio networks) and uniform textbooks used in schools. Another force that may promote uniformity is the UPCs (Universal Product Codes) that are found on most products at present. These codes are expressed both as Arabic numerals that can be read by a human and as bar codes that can be read by a bar-code scanner at a retail store.

The above experiences in English, Czech, and Spanish strongly suggested that we focus on food name variation across national boundaries. A natural application of this approach would have been to visit the Slovak Republic and compare the Czech Republic with the Slovak; however, this was not feasible in the present study. A study of food name variation within France was considered. In France, there are books showing dishes from all the regions of the country, such as Hanicotte (2005). However, restaurants all over France serve dishes from other regions. The regional distinctions are becoming quite blurred, and regional names are known outside their region of origin. One region of the United States where it might make sense to conduct a food name variation study is Louisiana, with its Cajun influence (Eble 1988). In the end, as will be seen below, it was decided to study variation in French food names across the France-Switzerland border.

A BASELINE STUDY USING FRENCH. Some research was conducted at the library of the University of Neuchâtel. It was found that a careful study of lexical variation had been done between France and the French-speaking part of Switzerland (Thibault, 1997). This study was based on the *Trésor de la langue française*, a huge database of French documents, compared with sources in Switzerland, especially newspapers and magazines. The dictionary resulting from the Thibault study was examined in detail and all food names were extracted. University librarians suggested that indeed there are a number of food name differences between the two countries. Apparently, some Swiss French food names are not known in France. It was decided to pursue this promising avenue.

The list of food names supposedly specific to French-speaking Switzerland extracted from Thibault (1997) was then used as the basis for a baseline study. The question to be answered in the study was whether there is a significant difference (in the year 2006) between French food names in Switzerland and French food names in France. It was not clear how the baseline study would turn out. There was reason to believe that the study of French food names would show variation between France and Switzerland. There was also reason to believe that there would be no significant variation.

1. REASONS TO EXPECT VARIATION. Some reasons to expect significant variation in food names across the France-Switzerland border are that Switzerland is not part of the European Union, that France and Switzerland have cultural differences, and that Switzerland is a multi-lingual country while France is essentially monolingual.

Switzerland, for hundreds of years, has kept itself somewhat separate from the rest of Europe. It has not joined the European Union, and it has kept its own currency. Relocation within Europe is relatively easy. A European Union passport allows someone to live in another European Union country without applying for a visa. However, it is not easy for a foreigner to move to Switzerland. Work permits are difficult to obtain and Swiss citizenship even more so. These factors suggest that there may be more linguistic differences between France and French-speaking Switzerland than between France and French-speaking Belgium, for example.

Switzerland has its own culture. Tourists notice it as they cross the border into Switzerland. Cultural differences often include linguistic differences. The Swiss culture includes traditions concerning how food is prepared and consumed. One would expect some of these traditions to include Switzerland-specific food names.

There is only one official language in France. However, there are four national languages in Switzerland: German, French, Italian, and Romansh, three of them (German, French, and Italian) being official languages. With four languages in one small country, it would not be surprising if there were some borrowings among the languages that are not found outside Switzerland.

2. REASONS NOT TO EXPECT VARIATION. Some reasons *not* to expect significant variation are that travel between France and Switzerland is easy, that French television is seen in Switzerland, and that there is a sense of unity in the French-speaking world.

Despite the fact that Switzerland is not part of the European Union, travel into Switzerland is becoming easier. For example, in some cases, such as crossing the border from Germany into Switzerland by train, there is no longer a passport control. This encourages travel to Switzerland.

Television is a unifying factor in many countries, and several French television channels are widely available in Switzerland. This should be a factor in reducing lexical variation between France and Switzerland.

The French-speaking world has a name for itself, *la francophonie*, and people who are in other ways at odds with each other often join together in an effort to promote the use of French around the world.

3. **METHODOLOGY.** In order to determine whether or not there is a significant difference between French food names in France and Switzerland, we will start with the list of candidate lexical items that are believed to be specific to Switzerland and apply the following methodology.

Given a list of food names that are supposedly specific to one locale, that is, to a region defined by a country and a language within that country, the next step is to validate that list according to the locale, which we will call Locale A. This involves finding respondents who are native to that locale and who have not lived for any extended period in the other locale of study, which we will call Locale B. These respondents are then asked to give an explanation in the form of a brief definition or synonym of each food item with which they are familiar, or to indicate for a particular item that they are not familiar with that food name. For an item to be retained on the list, a majority of the respondents must not only recognize the food name but give identical or equivalent explanations of the meaning of the item.

The list is also presented to respondents who are native to Locale B and have not lived for any extended period in Locale A. These respondents are also asked to give an explanation for each item. Then the responses for Locale B are processed to divide them into three categories: known, ambiguous, and unknown. An item that is *known* is recognized by the majority of the Locale B respondents as the same food item identified by the Locale A respondents. An *ambiguous* item is recognized by the Locale B respondents as a food item but a different one than the food item identified by the Locale A respondents. An *unknown* item is simply not recognized by the Locale B respondents. In some cases, this will represent an instance of synonymy of food names. In other cases, it represents a regional food item.

If a majority of the validated food items are found to be either ambiguous or unknown to the Locale B respondents, we will declare the original list to represent very significant food name variation between the two locales. If one third or more of the items are found to be either ambiguous or unknown, then we will still declare a significant level of variation.

By recording the list of food names with their descriptions, along with the results of validation in Locale A and responses from Locale B, the same experiment can be conducted again with different respondents, to see if the results are replicated; and later, after several years, the experiment can be conducted yet again in order to measure diachronic changes in food name variation.

4. **ANALYSIS.** For this particular baseline study, a list of 43 candidate items was extracted from Thibault (1997), as described above. The validation step was done with three Locale A respondents who had grown up in various parts of French-speaking Switzerland and who had never lived in France. Of the 43 items, 11 were eliminated during the validation phase. In most cases, an item was either recognized by all three respondents or by none of the respondents. In two cases (*cramias* and *damassine*), one respondent identified the item as a dandelion or an *eau-de-vie*, respectively, as found in the Thibault (1997), while it was unknown to the other two. In one case (*meuron*), no one identified it as a blackberry but one thought it was a type of meat. Remarkably, this was the only instance of disagreement between the Locale A respondents and the Thibault dictionary. The list of 11 items eliminated during the validation phase is given in Appendix A.

The 32 remaining food names were then presented to three Locale B respondents who had grown up in Paris and never lived in Switzerland. Their responses were almost entirely consistent. In one case, *vacherin*, which merits further research, there was disagreement among the Locale B respondents, some identifying it as a type of cheese while one identified it as perhaps being a dessert dish based on ice cream. Of the 32 items, 25 were either ambiguous or unknown to the Locale B respondents. This far exceeds the threshold of 17 (a majority of 32), so the validated list is declared to represent very significant variation. Seven items of the 32 items are no longer strongly regional and have crossed over into French food name usage. Details of the results are found in Appendix A.

5. CONCLUSION. The result of the baseline study of French food name variation between France and French-speaking Switzerland is clear: There is a very significant level of variation, including ambiguity, such as two widely different meanings for *abricotine*, and synonymy, such as *raisinets* in Switzerland and *groseilles* in France for the same fruit (red currants). Furthermore, the experiment revealed a high level of inter-respondent reliability, with Swiss-French respondents agreeing among themselves and French-French respondents agreeing among themselves. This suggests that we can assign a high level of confidence to the results. Furthermore, the methodology employed does not require respondents to speculate about the other locale. Each set of respondents considers only their personal experience with food names. Therefore, we claim that this methodology is sufficiently solid to justify its use in other food name variation studies and even other types of lexical variation.

Several years from now, baseline studies should be repeated in order to determine whether food name variation is increasing, decreasing, or remaining constant. Globalization tends to make things uniform across national boundaries, yet cultural variation does not appear to be disappearing. Indeed, a culture associated with a country often resists the intrusion of foreign items. A longitudinal study of food name variation would provide some insight into which force, globalization or cultural identity, is winning.

6. FUTURE WORK. Several additional studies within food name variation would be obvious follow-ons to this study. One would be to conduct exactly the same study with different sets of respondents from Locale A (French-speaking Switzerland) and Locale B (France), to determine whether the same result is obtained. It would be advisable to include more respondents in each group and to employ more formal statistical methods. It would also be interesting to look for new food items that have recently entered into Swiss French or for some reason were not included in the list used for the baseline study. I encountered one such item in the process of doing the research for this paper: *girolle*. A *girolle* has meant a type of mushroom for many years. However, more recently, there is another meaning: a type of edible decorative item made from scraped hard cheese that is rolled up to resemble a mushroom. The term also refers to a machine that is designed specifically to facilitate the creation of these cheese decorations (Girolle 2006).

An issue not addressed in the present study is how much difference justifies separate food names. Examples from the present study are whether *cuchaule* and *miche* (both round breads) and whether *knöpfli* and *spätzli* (both very small boiled-flour dumplings) are

sufficiently different to merit separate names. This issue, which is beyond the scope of the present study, should be addressed in future studies.

Another direction that future research could go is to study food name variation between France and French-speaking Canada. During the presentation of this paper in Toronto at LACUS 2006, an obvious example was found: a can of fruit drink described as containing *bleuets et melon d'eau* on one side and *blueberry watermelon* on the other side. In France, blueberries are *myrtilles* and watermelon is *pastèque*.

Switching from French to Spanish, a future study could involve Spanish food names in various Spanish-speaking countries. A different approach to obtaining preliminary data is described in Alba (2000). Here, instead of searching documents for references to food, respondents were asked to name food items, with no pictures or words as prompts. Then, a frequency analysis was done to determine the most frequently produced food names by respondents in the following countries: Chile, Spain, Mexico, Dominican Republic, and Argentina. Puerto Rico was also included, even though it is not a fully independent country. The one hundred most common food names for each of those countries were supplied to us by Professor Alba for analysis. The preliminary list of Spanish food name variations obtained using this methodology is shown in Appendix B. This list was produced with the help of two students, Marc Carmen, with English his first language and Spanish his second, and Leticia Klemetz, who grew up in Spain and translates professionally from English to Spanish.

A future study related to the work done in the Czech Republic could be to compare Polish food names in Poland with Polish food names in Chicago, which has a very significant Polish population.

Yet another possible direction for research in food name variation is to cross language boundaries as well as national boundaries. One multilingual project could begin with a data gathering phase of restaurant menus from all over the world and put them into an electronic corpus using a specialized markup language for menus. Then the corpus could be used as the basis for a multilingual terminology database of menu items, focusing either on the elements in descriptions of dishes or on the often idiosyncratic names of dishes, or both. Eventually, with the help of volunteer terminologists, such a database could be useful in creating more intelligible translations of restaurant menus than are typically found while traveling from country to country. Another multilingual project could begin with a database of UPCs (UPC 2006) for food items in some country and invite volunteers to find UPCs in their country and link them to the base set of UPCs. The UPCs would then be linked to points in a concept system.

Lexical variation is a vast area of research. By limiting lexical variation studies to one narrow domain, such as food names, it becomes more feasible to conduct rather exhaustive studies between two locales. Multilingual studies might also be feasible, especially in today's Internet climate where 'wiki' (on-line collaborative) projects, such as Wikipedia (<http://www.wikipedia.org/>) have been so successful.

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APPENDIX A: A BASELINE STUDY OF FRENCH FOOD NAME VARIATIONS

Eliminated because the Swiss locals did not recognize them (11):

- barbue: a young grape vine
- bondelle: a type of fish (scientific name *Coregonus exiguus*)
- cramias: a flower (dandelion)
- crotchon: a crouton
- damassine: a type of prune
- grabons: small pieces of pork fat (also called *grebons* or *greubons*)
- meuron: a wild blackberry
- nillon: remains after pressing oil out of walnuts
- pallée: a type of fish (scientific name *Coregonus schinzi*)
- stiflates: a delicate crispy pastry
- tête de marbre: a type of meat (cold cuts)

Known by Swiss locals, with results from French locals (32):

- abricotine: Ambiguous: a pastry in France, made with apricots; a liqueur in Switzerland, made from apricots
- attriau: a type of meat (flattened ball) made from pork liver: Unknown in France
- bircher: short for birchermüesli, a cereal made from oats, fruits, and (usually) nuts: Unknown in France
- biscôme: a baked item similar to gingerbread: Unknown in France
- bouchoyade: raw pork meat: Unknown in France
- boule de Bâle: a sausage similar to a cervelas: Unknown in France
- boule de Berlin: a deep fried pastry filled with jelly: Known in France
- branche: a type of chocolate in the form of a stick, eaten by children with bread: Unknown in France

- bricelot: a small, crisp waffle: Unknown in France
- café complet: a light evening meal, usually coffee with bread and cheese or bread and jam: Unknown in France
- carotte rouge: beet: Unknown in France (they call it *betterave*)
- couenne: the crust of a cheese or ham: Unknown in France (for cheese, the French call it the *croûte*)
- croûte dorée: French bread: Unknown in France (they call it *pain perdu*)
- cuchaule: a round bread: Unknown in France
- flûte: Ambiguous: in France a large traditional bread; in Switzerland, a small, thin, salted bread stick
- fondant: a chocolate filling mixed with finely chopped almonds: Known in France
- herbettes: a mixture of fine herbs: Unknown in France (probably has another name in France)
- knöpfli: small pieces of salted flour-water mixture, eaten with a sauce, like pasta: Unknown in France
- miche: small, round bread: Unknown in France (although in a large dictionary)
- papet: a meal consisting of meat, potatoes, and vegetables, usually leek: Unknown in France
- porreau: leek: Unknown in France (they use the word *poireau*)
- raisinet: red currents: Unknown in France (they use the word *groseilles*)
- renversé: coffee with more milk than coffee: Unknown in France
- ristrette: a very strong coffee: Unknown in France
- rösti: fried shredded potatoes: Known in France
- séré: a type of cream cheese: Unknown in France, similar to what they call quark
- spätzli: made from boiled flour, similar to knöpfli: Known in France
- taillaule: a light pastry made of eggs, flour, butter, and sugar: Unknown in France
- tresse: a braided white bread: Known in France
- vacherin: a type of cheese: Known in France
- wienerli: a type of sausage presumably from Vienna but not known there: Unknown in France (they would call it some kind of sausage)
- yogourt: a variant spelling of *yoghurt*: Known in France as *yaourt*

Unknown in France: 23 of the above

Known in France: 7 of the above:

- boule de Berlin: this pastry has made its way into France
- fondant: chocolate with this type of filling is exported from Switzerland to France
- rösti: this fashion of preparing potatoes, similar to hash browns, has become known in France
- spätzli: this alternative to traditional pasta is also called *pâtes d'Alsace* ('Alsacian pasta')
- tresse: this type of braided bread is now available in France

- vacherin: this type of cheese is now known in France
- yogourt: this was recognized as a spelling variant of *yaourt* (the standard French spelling)

Ambiguous in France: 2 of the above:

- abricotine: in France, a pastry made with apricots; in Switzerland, a liqueur made with apricots
- flûte: in France a large traditional bread; in Switzerland, a small, thin bread stick



APPENDIX B: PRELIMINARY LIST OF SPANISH FOOD NAME VARIATIONS

synonymy:

- beans: *frijol* in Mexico but *judía* (also *habichuela*) in Spain; *poroto* in Chile
- cabbage: *repollo* in much of Latin America but *col* in Spain
- beets: *betarraga* in Chile but *remolacha* in Spain and Argentina
- peach: *melocotón* in Spain but *durazno* in Chile, Mexico, and Argentina
- corn: *choclo* in Chile but *maíz* in Spain and Mexico
- avocado: *palta* in Chile and Argentina but *aguacate* in Spain and Mexico
- shrimp: *gamba* in Spain but *camarón* in Mexico
- papaya: *papaya* in Spain but *lechosa* in the Dominican Republic

ambiguity:

- tortilla: thin unleavened bread in Mexico vs. thick with eggs in Spain
- manteca: lard in Spain but butter in Argentina



LEXICAL VARIATION ACROSS ASTURIAS AND THE 'DOMINO ASTUR'

ENRIQUE PATO
Université de Montréal

DAVID HEAP
University of Western Ontario

IN THIS PAPER¹ we present the *Atlas Lingüístico de la Península Ibérica* (ALPI) as a source of data for research on the dialects of Spain, as well as examining the Asturian language, and the 'Dominio Astur' as a linguistic entity. We also present some new maps of lexical variables, based on ALPI data from the Asturian region.

1. THE ALPI PROJECT. The *Atlas Lingüístico de la Península Ibérica* (or Linguistic Atlas of Iberian Peninsula, here ALPI) was a project begun in 1930 and almost concluded by the outbreak of the Spanish Civil War in 1936. In 1939 the project's director Navarro Tomás took the fieldwork notebooks with him into exile in New York. In 1951 the materials were returned to Madrid, on the condition that the project be completed by members of the original fieldwork team trained by Navarro Tomás. By the mid-1950s the surveys were completed, but it took until 1962 for Manuel Sanchis Guarnier, Lorenzo Rodríguez-Castellano and Aníbal Otero to complete the editing and cartography for the first and only volume to appear in print (ALPI 1962). The project was discontinued by the mid-1960s; in 1975 Navarro published a *Noticia Histórica del ALPI*, and nothing much more was heard about the materials until they were unearthed in 2001 (Heap 2002, in press). In all, more than 36,000 pages have been preserved: two notebooks (Cuaderno I, *Fonética y gramática*; Cuaderno II, *Vocabulario*) for each of 527 survey points across the Iberian Peninsula.

The most complete collection of ALPI notebook materials is currently housed in the Theoretical and Applied Linguistics Laboratory at the University of Western Ontario, where since 2002 we have been publishing the data electronically on the internet (see <http://www.alpi.ca>). Scanned facsimiles of the original fieldwork notebooks can be accessed via an interface which allows users to select a province or provinces, then survey points and finally questionnaire pages which are of interest to them. The data are freely available for scholarly purposes (teaching and research): To access them, users are simply required to register and agree to the terms of use. There are currently over 450 registered users, who have downloaded thousands of pages of data like the one shown in **Figure 1** (overleaf), available in both jpg and pdf formats.

While it is still not an 'atlas' in the traditional sense of linguistic forms being projected onto maps, the current online ALPI format makes available to the scholarly community a wealth of unique linguistic data which were otherwise unavailable for decades. The flexibility of the internet publication format also allows for the pages to be made available as soon as ready and for corrections to be made whenever necessary. Future aspects of the project include the possibility of automatic mapping on the internet (as had been done with data from the Varilex project, see Ruiz Tinoco 2001), but this requires the retranscription of the

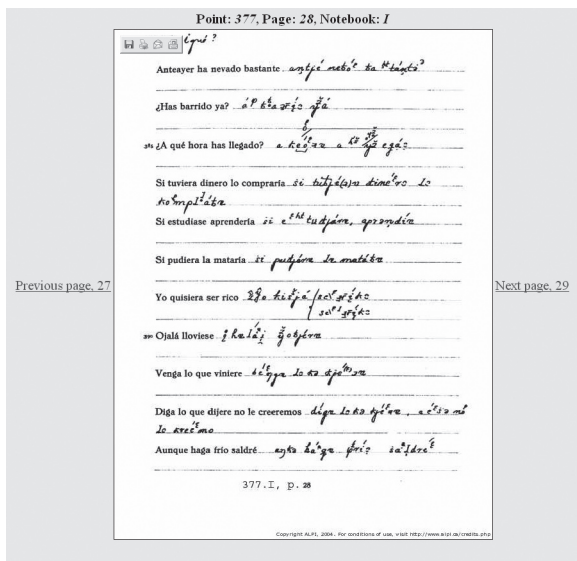


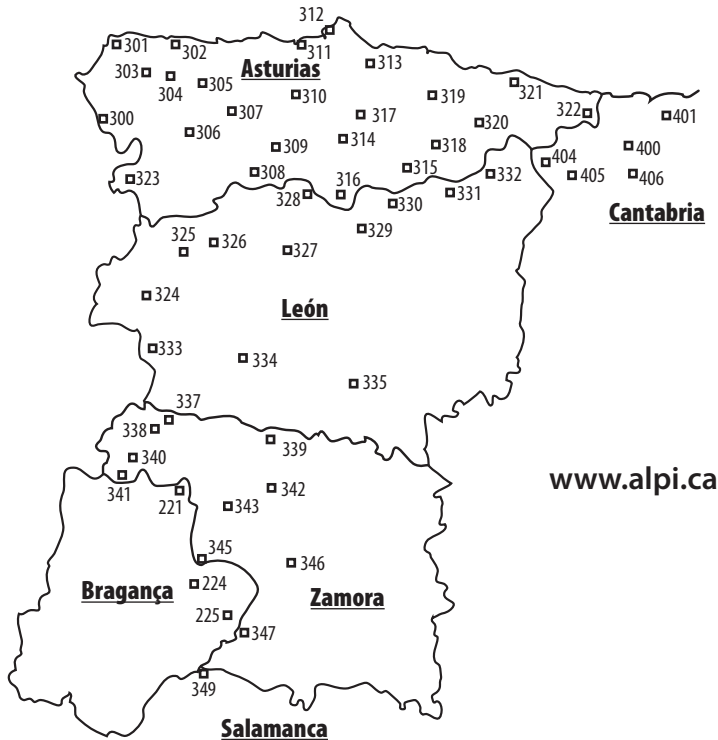
Figure 1. Sample notebook page from the online ALPI, from one selected survey point.

notebooks into relational databases (Kretzschmar 1999), a massive undertaking which will only be possible with international collaboration involving teams of scholars from different institutions.

Currently, only phonetic and morphosyntactic data (Cuaderno I) are available online; while the lexical material (Cuaderno II) are being prepared for internet publication, there are technical difficulties yet to be resolved (Cuaderno II exists in two versions, General and Extended, each with different pagination, which make the interface for accessing the data more complex). The variables we have selected for presentation in this study are drawn from these as yet unpublished lexical data.

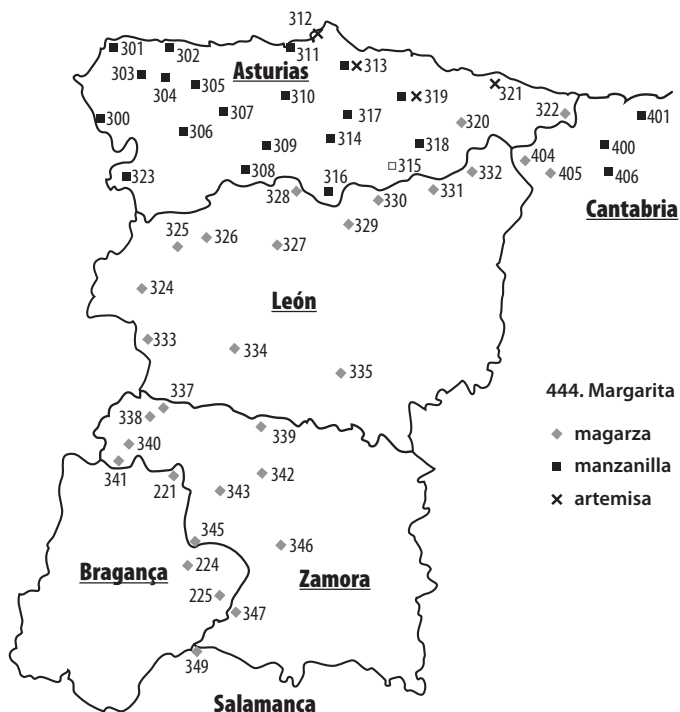
The links shown in **Figure 1** allow users to scroll backward or forwards through the pages of a given notebook.

2. THE ASTURIAN LANGUAGE (*ASTURLANU*). One of regional languages of Spain which does not have co-official status under the 1975 Constitution, Asturian counts some 605,000 speakers according to the 1994 census, mostly in the current Principality of Asturias Autonomous Region in northern Spain. Virtually all speakers of the language are Asturian-Spanish bilinguals. Since 1980 Academia de la Llingua Asturiana (see <http://www.academiadelalingua.com>) promotes language revitalisation and education, with the support of the regional government. These speech communities were considerably more vital in the 1930s and 1940s when the ALPI data were collected and when there were both a larger proportion of native speakers and more Asturian monolinguals.



- | | | |
|----------------------------|-------------------------|-----------------------------------|
| 221 Rio de Onor (Bragança) | 317 Cima la Villa | 337 San Ciprián de Sanabria |
| 224 Vimioso | 318 Nozaleda | (Zamora) |
| 225 Duas Igrejas | 319 Pintueles | 338 San Martín de Castañeda |
| 300 Salgueiras (Asturias) | 320 Sames | 339 Cubo de Benavente |
| 301 Las Campas | 321 Los Carriles | 340 Padornelo |
| 302 Freal | 322 Cimiano | 341 Hermisende |
| 303 Boal | 323 Cuantas | 342 Otero de Bodas |
| 304 Busmente | 324 Ponte de Rey (León) | 343 Mahide |
| 305 Navelgas | 325 Lillo de Bierzo | 345 Villarino tras la Sierra |
| 306 Santa Eulalia | 326 Páramo del Sil | 346 Losacio de Alba |
| 307 Soto de la Barca | 327 Omañón | 347 Fariza |
| 308 Pola de Somiedo | 328 Torrebarrio | 349 Villarino de los Aires |
| 309 Villanueva de Teberga | 329 Follado | (Salamanca) |
| 310 La Mata | 330 Pontedo | 400 Valle de Cabuérniga (Asturias |
| 311 Santiago del Monte | 331 Cofiñal | de Santillana) |
| 312 San Martín de Podes | 332 Pió | 401 Yermo |
| 313 Llantones | 333 Castroquilame | 404 Espinama |
| 314 Cenera | 334 Lucillo | 405 Vega de Liébana |
| 315 Felechosa | 335 Laguna Dalga | 406 Tudanca |
| 316 Malveda | | |

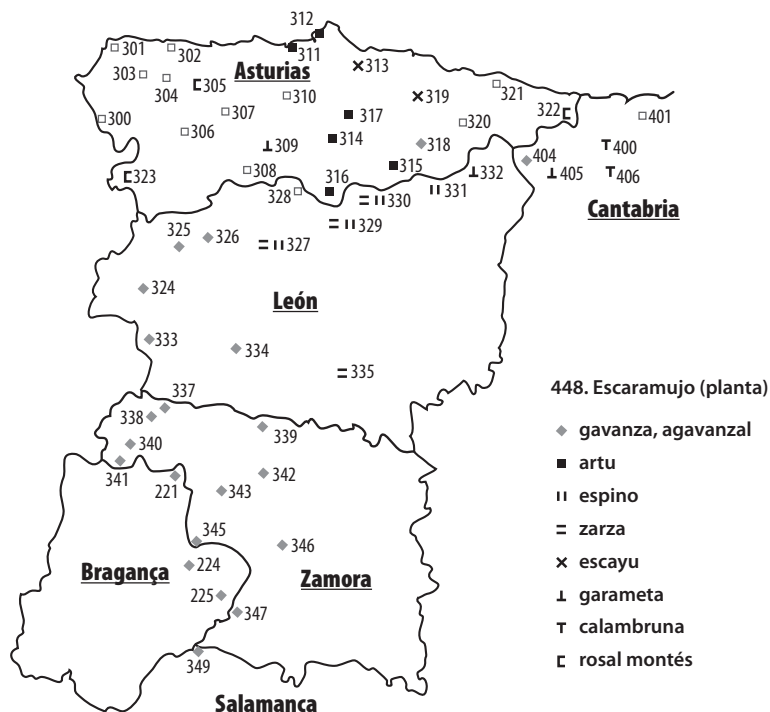
Map 1. ALPI points in the historical 'Domino Astur'



Map 2. Distribution of 'Margarita'.

2.1. THE 'DOMINIO ASTUR'. Asturias is traditionally divided into three major dialect areas: western, central and eastern Asturian, without any one variety being seen as a 'prestige norm' or standard. Historically, what some call the 'Asturian Domain' ('Dominio Astur') extended further south than the current administrative boundaries of Asturias, covering much of the former Kingdom of Leon. For the purpose of this study we have included all the *ALPI* points from Asturias (24), and selected points from the provinces of Cantabria (5), León (12), Zamora (10) and Salamanca (1), as well as the Portuguese region of Bragança (3), for a total of 55 points as shown in **Map 1**, on the previous page.

3. LEXICAL VARIATION ACROSS THE 'DOMINIO ASTUR'. We examined a large range of lexical variables from *ALPI* (Cuaderno II, Vocabulario), specifically terms for flora and fauna, from line #442 (*níscalo* 'wild mushroom') through line #575 (names for swine), and chose the ones shown below to investigate whether terminological distributions might reflect regularities in the classification and naming of plants and animals among peoples of traditional, nonliterate societies (cf. Berlin 1992). Some botanical lexical items had too limited a range to be mapped: This was the case of line 470. *Níspero* 'medlar', [*< Lat. MESPILUM/ NESPILA*], which showed the variants *mispero* / *niéspero*, but only appeared at a handful of points, since this fruit-tree was apparently not well-known at the time in most of the



Map 3. Distribution of 'Escaramujo'.

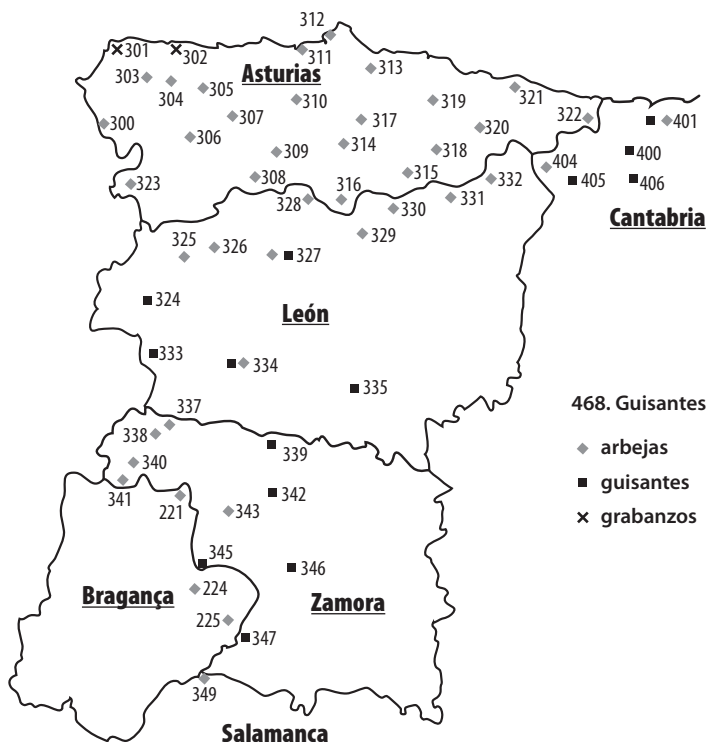
area studied. The selection presented here show different geographical distributions across the 'Dominio Astur.'

Map 2 shows the distribution of lexical variants for line 444. *Margarita* (daisy), with three main variants which we can divide by etyma: *magarza*, *amargaza* < *alharma* 'ruda, silvestre' [< *Ar. hárma*], *manzanilla* [< *Moz. massanèlla*], reflecting culinary uses, and *artemisa* < *Artemisa* (Diana), reflecting medicinal uses. Here the lexical variants seem to line up primarily with the administrative boundaries between Asturias and Cantabria to the north, as opposed to all points to the south of the Cantabrian mountain range.

Forms corresponding to 448. *Escaramujo* 'rosehip' are shown in **Map 3**, with a wider range of etymological types: *agavanzo* / *gavanza* / *agavanzal* [< *Moz. gabânso*], *escaramujo* [< *Lat. ESCARIUS MULLEUS* 'edible + fleshy'], *zarza* [< *sarza*], *espino* [< *Lat. SPINUS*], *garameta* [< *ganzaba*] 'rosebush', *calambruna* [*herba bruna*], *escayu* 'bramble, thorn', *rosal* [< *Lat. ROSA*] 'rosebush', *artu* 'bramble'.

The distribution here is a bit of a patchwork, with different forms characterizing different sub-areas, with only the southern *gavanza* variant having currency beyond one province.

Map 4 (overleaf) shows the distribution of an important staple foodstuff, line 458. *Guisantes* 'peas', which has as a main variant the same form as in the standard language: *guisantes* [< *Lat. PISUM SAPIDUM* 'tasty pease'], as well as other variants attested elsewhere in the



Map 4. Distribution of 'Guisantes'.

Iberian Peninsula, *arvejas* / *arveyos* (Old Spanish *arveja* / *arbeja* / *arbeya* [< Lat. ERVILIA 'dried peas'] and *grabanzos* [< garbanzos].

In this case we see what appears to be the intrusion of *guisantes* in the centre of León and Zamora and in Cantabria, with *arbejas* remaining to the north (on both sides of the Cantabrian range) and to the south (western Zamora and Bragança).

In **Map 5** we see the distribution of lexical variants for line 481. *Bellota* 'acorn', where alongside the standard form [< Ar. ballûṭa] we find a paragogic form *abellota* and *landa* / *alanda* [< Lat. GLANDEM].

Here it is the vernacular variant *abellota* which dominates both north and south of the Cantabrian range, with standard *bellota* concentrated in a compact area to the south and in a band across the modern-day principality of Asturias and Cantabria. The small number of *landa* / *alanda* forms are concentrated in eastern Asturias, in the area of Galician-Asturian influence.

4. CONCLUSIONS. The exploratory approach adopted here examines regional variation in 'the vocabulary of the intimate everyday life of the home and farm.' (Kurath 1949:9–10) on



Map 5. *Distribution of 'Bellota'.*

the hypothesis that use in traditional lifestyles may influence why some concepts exhibit a greater amount of lexical variation than others.

We have not found clear evidence for or against Berlin's (1992) contention that plants that have the greatest cultural importance as food and medicine have the fewest different names, while plants that are (believed to be) less useful may have names that vary more from region to region. While the contrast between the rich lexical variation for an item like *escaramuzo* vs. the relatively few variants for terms like *guisantes* (common human food) and *bellota* (a common animal fodder) is evocative in this regard, much more careful mapping work needs to be undertaken before any conclusions can be drawn regarding the nature of lexical variation in the area (see also Pato, in press).

In the future, we also hope to exploit the *ALPI* data on informants, which will allow us to explore correlations of linguistic variables with such demographic factors as age, gender, occupation, mobility and literacy level of speakers. We hope that future collaborations with dialectologists in Spain and elsewhere will help develop geolinguistic databases using the *ALPI* fieldwork notebooks which will allow us to map not just lexical but also phonetic and morphosyntactic data for this linguistic area for which no overall geolinguistic survey has yet been published.

- ¹ The authors express their gratitude to the LACUS editorial team for their patient help, as well as to the LACUS Forum reviewers.

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COLLOQUIAL VARIATION AND ITS IMPLICATIONS IN GRAMMATICALIZATION THEORY

SEONGHA RHEE

Hankuk University of Foreign Studies

AS IS THE CASE WITH ALL HUMAN LANGUAGES,¹ formal variation is observed at all levels of grammar. Among widespread variations is a peculiar phenomenon of formal variation that can be characterized as resulting from additive processes, an unexpected state of affairs in view of such widely accepted principles of grammaticalization as attrition, parallel reduction, erosion, and loss (Bybee *et al.* 1994; Lehmann 1995[1982]). According to these principles, linguistic forms located on the grammaticalization cline tend to move in the direction of phonological reduction as one of many parameters. Even though the change itself is never deterministic and thus the change does not have to occur, the direction of the change that does occur, is invariably toward the reducing the phonological volume. This direction of change observed across languages is considered to be sufficiently robust to qualify as a principle of grammaticalization: the unidirectionality principle. Since the directionality of change is indeed a strong principle operative in grammaticalization, any instances that do not conform to this principle should be of great academic interest. Interestingly enough, there are many such instances in Korean. However, there have not been any notable attempts to address the issue in earnest, and this paper intends to fill this gap, assessing the issue from a grammaticalization perspective.

1. DATA. The variational data under present investigation involve the grammatical forms occurring postpositionally with respect to their host, mostly nominals but verbals as well. The data selected for discussion consist of twenty postpositional particles that carry various grammatical meanings. Certain forms are polysemous, but we restrict our discussion to those meanings and functions that are relevant to the current issue. The cases are selected from spoken corpora (KAIST KORTERM Corpus, Sejong Corpus, etc.) and elsewhere (e.g. lexicons by the National Academy of Korean). Their forms, meanings/functions, and variational forms are listed in **Table 1** (overleaf).

In terms of semantic differences among variant forms, there seem to be hardly perceptible minor differential shades of meaning. However, the level of semantic differences is such that to most speakers of Korean they are simply other ways of saying the same thing. And these alleged other ways typically refer to dialectal, register, and style differences. Some judgment-givers, when pressed to explain the differences, offer an explanation that the addition of certain morphemes (e.g. *-pota* vs. *-potato* or *-potaya*) may bring forth some nuance of added emphasis. It is evident, then, that the differences, if any, are minimal.

“Standard” Form	Meaning/Function	Variations
<i>-pota</i>	than	<i>-potato</i> , <i>-potatwu</i> , <i>-potanun</i> , <i>-potam</i> , <i>-potamun</i> , <i>-potaya</i>
<i>-se</i>	because of; and then	<i>-sen</i> , <i>-senun</i> , <i>-sellang</i> , <i>-sellangun</i> , <i>-sellamwuney</i>
<i>-ul</i>	Accusative	<i>-ullang</i> , <i>-ullangun</i>
<i>-man</i>	but	<i>-manun</i>
<i>-chiko</i>	granting that; among	<i>-chikose</i> , <i>-chikosenun</i> , <i>-chikonun</i> , <i>-chikosen</i> , <i>-chikon</i>
<i>-hako</i>	and	<i>-hakon</i> , <i>-hakonun</i> , <i>-hakosen</i> , <i>-hakosenun</i>
<i>-kiey</i>	as	<i>-killay</i>
<i>-ni</i>	since, as	<i>-nikka</i> , <i>-nikkanun</i> , <i>-nikkan</i>
<i>-ketun</i>	if; Sentential Ending	<i>-ketullang</i> , <i>-kellang</i> , <i>-keteng</i>
<i>-key</i>	in order to	<i>-keykkum</i>
<i>-kilo</i>	as	<i>-kilose</i> , <i>-kiloseni</i> , <i>-kilosentul</i>
<i>-ncuk</i>	what X is	<i>-ncuksun</i>
<i>-mye</i>	at the same time; Sen- tential Ending	<i>-myense</i> , <i>-myensenun</i>
<i>-myen</i>	Conditional	<i>-myenun</i>
<i>-nula</i>	because of	<i>-nulako</i> , <i>-nulani</i> , <i>-nulanikka</i> , <i>-nulamyen</i>
<i>-ntey</i>	while; in addition to	<i>-nteytaka</i>
<i>-tun</i>	either or; (if or not)	<i>-tunci</i> , <i>-tuncikaney</i>
<i>-e</i>	Connective (NF)	<i>-ese</i> , <i>-esenun</i> , <i>-esen</i>
<i>-ko</i>	and	<i>-kose</i>
<i>-ko</i>	because of	<i>-kohayse</i>
<i>-lyemyen</i>	in order that	<i>-lyemyenun</i> , <i>-laymunun</i>

Table 1. List of target forms.

2. MOTIVATIONS FOR VARIATION. In recent grammaticalization scholarship, the research has been increasingly focused on the motivations that activate conceptual changes that trigger language change. The formal variation phenomenon as described here presents challenges to the widely held views and hypotheses of grammaticalization in terms of its motivation.

2.1. SEMANTIC-PRAGMATIC MOTIVATION. The most frequently addressed aspect of grammatical change is the semantic-pragmatic motivation. The forms under present investigation may be classified into four sub-groups.

2.1.1. ADDITION OF TOPIC MARKER. The first group consists of the forms that recruited the topic marker *-(n)un*, as shown in (1).

- | | | | | | | | | |
|-----|-------------------|---|---------------------|-----------------|-----------------|---|--------------------|------------|
| (1) | <i>-pota</i> | > | <i>-potanun</i> | 'than' | <i>-ncuk</i> | > | <i>-ncuk(s)un</i> | 'that is' |
| | <i>-se</i> | > | <i>-senun</i> | 'and' | <i>-man</i> | > | <i>-cimanun</i> | 'but' |
| | <i>-sellang</i> | > | <i>-sellangun</i> | 'because' | <i>-ese</i> | > | <i>-esenun</i> | 'because' |
| | <i>-chiko</i> | > | <i>-chikonun</i> | 'speaking of' | <i>-ko se</i> | > | <i>-kosenun</i> | 'and then' |
| | <i>-hako</i> | > | <i>-hakonun</i> | 'and' | <i>-kohayse</i> | > | <i>-kohaysenun</i> | 'as' |
| | <i>-hakose</i> | > | <i>-hakosenun</i> | 'and' | <i>-ullang</i> | > | <i>-ullangun</i> | Accusative |
| | <i>-myen</i> | > | <i>-myenun</i> | 'if' | <i>-nikka</i> | > | <i>-nikkanun</i> | 'because' |
| | <i>-lyemyen</i> | > | <i>-lyemyenun</i> | 'in order that' | <i>-mye</i> | > | <i>-myenun</i> | 'and' |
| | <i>-ketullang</i> | > | <i>-ketullangun</i> | 'if' | <i>-tanikka</i> | > | <i>-tanikkanun</i> | 'since' |
| | <i>-kellang</i> | > | <i>-kellangun</i> | 'if' | | | | |

The topic marker *-nun* is a very frequently used particle in Korean. This is due to the idiosyncrasy of Korean whereby case-stacking is relatively free and the topic marker is often stacked with other particles. One peculiarity with this stacking is that the topic marker does not always host a nominal, i.e., Korean allows for phrasal and clausal topics as well as nominal topics.

The topic marker sometimes has a contrastive effect, which contributes to the strengthening of meaning. The contrastive effect that results from the added topic marker, however, seems to be inconsequential in the examples in (1), since the effect is not noticeable.

2.1.2. ADDITION OF SEQUENTIALITY MARKER. The second set consists of examples that have added emphasis by means of *-se*, as shown in (2).

- | | | | | | | | | |
|-----|---------------|---|-----------------|--------------|-------------|---|-----------------|--------------|
| (2) | <i>-chiko</i> | > | <i>-chikose</i> | speaking of' | <i>-ko</i> | > | <i>-kose</i> | 'and' |
| | <i>-hako</i> | > | <i>-hakose</i> | 'and, with' | <i>-ko</i> | > | <i>-kohayse</i> | 'because of' |
| | <i>-kilo</i> | > | <i>-kilose</i> | 'even if' | <i>-mye</i> | > | <i>-myense</i> | 'and' |
| | <i>-e</i> | > | <i>-ese</i> | 'and' | | | | |

The sequentiality marker *-se*, originally developed from the existence verb *iss-* 'exist', adds the meanings of sequential posteriority, status, and causality to the following verbal. The added emphasis communicated by the sequentiality marker is largely due to the fact that, as it connects two verbal events, the sequentiality meaning between the two events creates a conceptual juncture whereby the two events draw distributed attention.

However, the sequentiality meaning is not always present with this marker, especially with the cases enumerated in (2). For instance, it is redundant after *-ko* 'and', and even contradictory with *-mye* 'simultaneous'. Therefore, it is reasonable to conclude that the semantic consequence of *-se* addition is either non-existent or at best minimal.

These observations point to the hypothesis that the recruitment of the sequential *-se* may have been motivated by the desire for semantic reinforcement, but the resultant reinforcement is not substantial.

2.1.3. SEMANTICALLY REDUNDANT CASES. Another kind of variation is formed with the use of semantically redundant morphemes, as shown in (3).

- | | | | | |
|-----|--------------|---|-------------------|--|
| (3) | <i>-ni</i> | > | <i>-nikka</i> | 'because' (<i>-kka</i> 'Reason') |
| | <i>-nula</i> | > | <i>-nulani</i> | 'because, since' (<i>-ni</i> 'Reason') |
| | <i>-nula</i> | > | <i>-nulanikka</i> | 'because, since' (<i>-nikka</i> 'Reason') |
| | <i>-nula</i> | > | <i>-nulako</i> | 'because, since' (<i>-ko</i> 'and') |
| | <i>-ko</i> | > | <i>-kohayse</i> | 'and' (<i>-hayse</i> 'Causal Connective') |

As shown in (3), *-ni* recruits *-kka*, which is a reason marker, thus becoming *-nikka*. Semantically, *-ni* already marks the reason, and the addition of another reason marker *-kka* results in semantic redundancy.

Likewise, *-nula* is the target of a similar additive operation: *-nulani* with the addition of the reason marker *-ni*; *-nulanikka* with the addition of doubly redundant *-ni* and *-kka*; and *-nulako* with the addition of the connective *-ko* 'and'. As for the last case, the addition of *-ko* is functionally redundant because *-nula*, being a clausal connective, has the connective function that translates into 'and', and therefore, the addition of another connective *-ko* 'and' results in redundancy.

The processes of semantic redundancy are often viewed as vacuous by virtue of their making no substantial semantic contribution. From a slightly different perspective, however, this type of semantically redundant operation presupposes either that the original form is so weak that it necessitates the use of a supplementary form, or that the new element is so weak that its addition does not cause a feeling of awkwardness even with the juxtaposition of two semantically identical forms. As a matter of fact, speakers of Korean do not perceive that the newly supplemented forms have any more semantic strength than the original, non-redundant forms.

The foregoing discussion leads to the conclusion that this particular group of variation formation is, speaking from a strictly semantic perspective, not well motivated, as the newly added elements do not add any substantial semantic content.

2.1.4. ADDITION OF CONTRUENT MARKER. The last group consists of cases where the original forms appear with other grammatical morphemes that are semantically or functionally congruent with the original forms, in the sense that they have similar and supplementary, but non-overlapping, semantics or functions, as is shown in (4).

- | | | | | |
|-----|--------------|---|------------------|--|
| (4) | <i>-nula</i> | > | <i>-nulamyen</i> | 'because, since' (<i>-myen</i> 'if') |
| | <i>-ntey</i> | > | <i>-nteytaka</i> | 'to, on top of' (<i>-taka</i> 'Transfervative') |
| | <i>-tun</i> | > | <i>-tunci</i> | 'whether' (<i>-ci</i> 'Determinative') |

The forms in (4) show that the cause/reason marker *-nula* 'because, since' is augmented with the conditional marker *-myen* 'if'. The reason marker *-nula* refers to a factual, not hypothetical, condition of causality. In this context, the addition of *-myen* 'if' does not add strict conditionality, but simply brings in the effect of background setting. This particular use of the conditional marker *-myen* is congruent with the reason marking for its ability to provide a background for the proposition that follows. The next case, *-ntey* > *-nteytaka*, also shows added emphasis through the additive process. The main function of

the transferentive *-taka*, historically derived from the verb *taku-* 'to draw near', is to signal a focus shift, but the other function it carries, presumably as a result of equally distributed focus, is to add emphasis to a locative. This is well illustrated in the paired examples: *chayksang-ey* 'on the desk' vs. *chayksang-eytaka* 'on top of the desk, onto the desk' Likewise, the last case: *-tunci* makes use of *-ci*, which has to do with the speaker's emotion or belief, and the determinative aspect (Rhee 2007).

It is noteworthy, however, that even though the recruited particles in the variational formation seem to have the potential for semantic strengthening, the resultant variational forms do not in fact contribute much of an increase in the semantic content of the variant forms, and the resulting effect is largely not noticeable. The most common intuitive description of the differences between the original and the variant forms is that the latter are simply other ways of saying the same thing.

It has been repeatedly shown in the preceding discussion that there are many instances that exhibit a peculiar change, i.e. the addition of certain phonetic or morphological elements whose semantic characteristics supposedly could bring forth semantic reinforcement, but in reality the resultant forms do not contain any substantial semantic increase. This may have to do with the idea of exaptation as suggested by Lass (1990), which refers to linguistic recycling, i.e. making use of something for a certain function that differs from its original function, an operation that does not result in a substantial increase in semanticity. The topic marker *-nun* and the sequentiality marker *-se* are among the ideal linguistic forms for exaptation, since their semantic content is impoverished.

2.2. PHONOLOGICAL CHANGE. The first type of phonological change is the addition of seemingly meaningless sounds as shown in the partial list of such cases in (5).

- | | | | | | | |
|-----|--------------|---|---|---------------|---|------------------------------------|
| (5) | <i>-se</i> | > | <i>-sellang</i> 'and' | <i>-se</i> | > | <i>-sellamwuney</i> 'and' |
| | <i>-kiey</i> | > | <i>-killay</i> 'because' | <i>-ketun</i> | > | <i>-ketullang, (-kellang)</i> 'if' |
| | <i>-kilo</i> | > | <i>-kilosoni, (-kiloseni)</i> 'because' | <i>-key</i> | > | <i>-keykkum</i> 'in order to' |

The changes observed in (5) do not seem to have been motivated by semantics, simply because the newly added phonetic elements are non-morphemic or they have no clear semantic relations. If any semantic relation must be found, *-soni* and *-seni* may have something to do with the reason marker *-ni*, which cannot yet be established. The *-kkum* in *-keykkum* may have to do with the Middle Korean emphatic particle *-kom*, which again cannot be established from the current level of research.

From the phonological perspective, these additive changes seem to suggest a more aesthetic motivation. That is, considering that some of the examples in (5) involve the addition of the liquid [l] and/or the nasal [ŋ], characteristics often attributed to child and feminine language for their euphony effect, especially in the case of [l] (Koo 2001), it is suspected that they are simply added to make the new forms sound better. As a matter of fact, the variant forms *-killay* and *-kellang*, in particular, are regarded as favored by female speakers.

Phonological motivations with the other two cases are less clear. As indicated earlier, they do not seem to have strong semantic motivation, which leaves us with the option of

phonological motivation. Then the additive processes that result in *-kilosoni* and *-kiloseni* seem to have been triggered merely by the desire to increase the phonetic volume of the grammatical form, probably to make it more perceptible. This hypothesis seems reasonable, considering that the semantic bleaching and the phonological weakening concomitant with the process of grammaticalization may have made the speakers of the language attempt to reinforce the phonetic volume.

The second type of phonological change comprises those that have undergone the seemingly unmotivated sound changes as listed in (6).

- (6)
- | | | | |
|-------------------|---|------------------|---------------|
| <i>-potan</i> | > | <i>-potam</i> | ‘than’ |
| <i>-ketun</i> | > | <i>-keteng</i> | ‘if’ |
| <i>-lyemyenun</i> | > | <i>-laymunun</i> | ‘in order to’ |

The examples given in (6) constitute a unique case, in that the changes can not be characterized as additive processes, and the motivation behind them is not clear. We might suspect that the case of *-potan* > *-potam* may have been motivated by shift of the originally alveolar [n] to the labial location of the initial consonant, a thesis undermined by the fact that the consonant immediately preceding it is alveolar, not labial.

In the case of the change from *-ketun* to *-keteng*, the explanation is equally difficult, but as the new variation has the nasal [ŋ], it may possibly have to do with the euphony effect discussed in the preceding section. However, this is by no means clear.

Likewise, the last case is mysterious. In terms of phonetic values, the two forms involved may be represented as [lyəmyənʊn] > [ləmʊnʊn]. The audible change is the simplification of articulatory gesture with the loss of the glides. Other than this minor economy in articulation, no plausible motivation for this sound change can be found.

2.3. STYLISTIC MOTIVATION. The next aspect of the variations under consideration is the stylistic motivation. **Figure 1** is a rough diagram in which the forms are plotted along a formal/literary and informal/colloquial continuum. Even though the exact locations of the forms have not been determined by way of formal measurement, the plot is consonant with the native-speaker intuition in general.

Among notable observations about the diagram in **Figure 1** is the fact that the formal/literary variety is usually shorter than the informal/colloquial counterpart. This is due to the process of addition. On the other hand, among the informal/colloquial varieties, the ones toward the polar extreme tend to be shorter. This is due to the process of contraction. Therefore, in terms of phonological volume there is shortening and lengthening alternating along the way. This fluctuation is illustrated in the partial list of the forms in more simplified representation in (7).

- (7)
- | | | | | | | | | | |
|---------------|---|-----------------|---|--------------------|---|------------------|---------------|----------------|---------------|
| <i>-pota</i> | > | <i>-potanun</i> | > | <i>-potam</i> | > | <i>-potamun</i> | ‘than’ | | |
| <i>-chiko</i> | > | <i>-chikose</i> | > | <i>-chikosenun</i> | > | <i>-chikosen</i> | > | <i>-chikon</i> | ‘speaking of’ |
| <i>-ni</i> | > | <i>-nikka</i> | > | <i>-nikkanun</i> | > | <i>-nikkan</i> | ‘because, as’ | | |

Formal/Literary			Informal/Colloquial (Dialectal)		
-pota	-potanun		-potam	-potamun	
-se	-senun		-sellang	-sellangun	-sellamwuney
-ul			-ullang	-ullangun	
-man	-manun				
-chiko	-chikose	-chikonun	-chikosenun	-chikosen	-chikon
-hako	-hakonun		-hakon		
-man	-manun				
-kiey		-killay			
-ni	-nikka		-nikkanun	-nikkan	
-ketun			-keteng	-ketullang	-kellang
-key	-keykkum				
-kilo	-kilosoni	-kilose	-kiloseni		
-ncuk		-ncuksun			
-mye	-myense				
-myen		-myenun			
-nula	-nulako	-nulani	-nulamyen	-nulanikka	
-ntey	-nteytaka				
-tun	-tunci				
-ko		-kobayse			
-lyemyen		-lyemyenun		-laymunun	

Figure 1. Variation on formality/colloquiality scale.

One caveat is that not all forms follow this pattern. For instance, the forms derived from *-se* show a continuous pattern of uniformly increasing phonetic volume, i.e. *-se* > *-senun* > *-sellang* > *-sellangun* > *-sellamwuney*.

One other aspect that merits our attention is that there is an interesting diachronic fluctuation whose pattern is not consonant with the speaker's intuition that contributes to the style-sensitive selection of forms. For instance, *-man* when affixed to a proposition fully equipped with morphological trappings, i.e. marked with a complementizer, is thought by most lexicographers and grammarians to be a contracted form of *-manun* (cf. Lee & Lee 2003[2001], Dong-A Say Kwuke Sacen 2006, among others). According to this analysis, the forms with *-man* affixed, e.g. *-taman*, *-ciman*, *-kkaman*, *-laman*, *-caman*, are contracted forms of *-tamanun*, *-cimanun*, *-kkamanun*, *-lamanun*, and *-camanun*, respectively.

If this hypothesis is correct, an intriguing pattern emerges. Speakers of Korean largely agree with the idea that *-taman* is more formal than *-tamanun*; *-ciman* more formal than *-cimanun*, etc. This is also well illustrated by the fact that in texts in formal registers, such as newspaper reports and academic papers, the shorter forms are almost exclusively used. Certain inferences then follow. Historically the short form, e.g. *-taman*, was derived from a long form, e.g. *-tamanun*, in which case the original form, i.e. the longer form, is supposed to have been used in a more conservative style. This is a natural assumption, because in the situation where a conservative form and an innovative form are layered (Hopper 1991, Hopper & Traugott 2003[1993]), the more conservative form, i.e. the longer *-tamanun* in this case, is associated with the formal register, and the innovative form, i.e. the shortened

variant *-taman*, is associated with the informal/colloquial register. However, as noted above, this pattern is the exact reverse of the pattern in contemporary Korean.

There are two possible scenarios for this state of affairs: one may be that when *-taman* had acquired a sufficiently standard status (cf. specialization, Hopper 1991, Hopper & Traugott 2003[1993]) perhaps through attaining sufficient frequency of use, the more conservative form was relegated to a peripheral status. The speakers would then employ the peripheral, less standard, form in informal styles.

The other possible explanation is that when the innovative *-taman* gradually gained supremacy over the original *-tamanun*, the use of the latter decreased, perhaps almost to disuse. A new innovative operation applied to the now standard *-taman*: the addition of the topic marker *-un*, a very common process in variation formation, as discussed previously.

In the absence of conclusive data, both options are equally viable. In either case, as long as phonological shapes are concerned, the path these forms traveled can be represented as [*-tamanun* > *-taman* > *-tamanun*], and all forms involving *-man* should have traveled analogically similar paths.

3. DISCUSSION. The issues presented here warrant a discussion with respect to grammaticalization principles. Among many principles and hypotheses, only the three that are immediately relevant and have significant implications are chosen for discussion: unidirectionality in form and meaning, form-meaning parallel reduction, and renewal of grammatical forms.

3.1. UNIDIRECTIONALITY IN FORMAL CHANGE. The first issue is related to the unidirectionality principle of change in form. It is an established fact that linguistic forms undergoing grammaticalization processes tend to experience phonological loss. Lehmann (1995[1982]) defines phonological loss as the process whereby grammaticalizing forms lose their phonological volume.

However, the data presented here clearly show otherwise: the increase of phonological volume through additive processes. One caveat, of course, is that the additive process does not occur in such a way that the self-same form becomes shorter or longer, but that it creates multiple forms that coexist as style-sensitive variational forms. Since grammaticalization has been largely conceived of as a monolinear process, the idea that there are multiple forms forming clusters and that the creation of these multiple forms may often employ additive operations has not received attention to date in grammaticalization scholarship.

Granted that unidirectionality is not a never-failing principle,² the type of formal variation presented here constitutes a research issue, since they show systematicity with respect to the deviance from unidirectionality.

3.2. UNIDIRECTIONALITY IN SEMANTIC CHANGE. The next issue involves unidirectionality in semantic change. From the early studies of grammaticalization, it has been widely accepted that grammaticalizing forms undergo semantic bleaching. According to the concept of bleaching, grammaticalizing forms lose their semantic content or semantic specificity en route. The same idea is presented in different terminology, e.g. semantic

generalization, desemanticization, semantic attrition, etc. (Bybee *et al.* 1994, Lehmann 1995[1982], *inter alia*).

However, as shown in the preceding discussion, the examples presented here show otherwise. The variant forms that are in active use do not exhibit any noticeable, or at least more substantial, semantic differences. As has been made explicit in the preceding discussion, they show stylistic variations only.

3.3. FORM-MEANING CORRELATION. It has also been widely held since early grammaticalization studies that the phonological volume and frequency of use are closely related. This claim has been upheld in such studies as Bybee (1985), Bybee & Dahl (1989), Bybee *et al.* (1994), Rhee (2003) and many others. Bybee *et al.* (1994), in particular, presented the parallel reduction principle, which states that formal reduction and semantic generalization proceed in tandem.

However, the examples presented here show otherwise. As shown in the preceding section, there is no substantial meaning change involved in the formation of variants, whereas it involves considerable formal change, especially an additive one.

3.4. RENEWAL OF GRAMMATICAL FORMS. The final discussion addresses the concept of renewal. Grammaticalizing forms, after undergoing a substantial level of grammaticalization, may be replaced by longer, innovative, forms. Renewal is a mechanism language uses to maintain the level of complexity in the face of ever-shrinking form and meaning.

However, the examples presented here show otherwise. Even though the particles are grammaticalized forms, in the sense that they carry grammatical concepts, the particles addressed here are by no means at the extreme of the grammaticality continuum, as is shown by the fact that many of them still show their lexical origin, and that they are morphosyntactically periphrastic forms, a fact suggesting that they have not (yet) proceeded along the grammaticalization path to a considerable degree. Therefore, it can be asserted that the occurrence of the additive variation formation is not posterior to the stage of a substantial level of grammaticalization. In other words, the innovative forms came into existence while their targets of competition were non-extreme grammatical forms.

4. CONCLUSION. The discussion in this paper may be recapitulated in the following terms. The grammaticalization processes in terms of both form and meaning cannot be uniformly characterized as reductive processes. Grammaticalization paths are by no means monolinear and uniformly unidirectional, but involve fluctuation and variation, especially along such parameters as style and register. The additive processes seem to be motivated mostly by the desire for semantic reinforcement and recruit paradigmatically versatile particles with weak, but still remaining, semantic content, suggesting exaptation (Lass 1990), as is well illustrated by the addition of the topic marker *-nun* and the sequentiality marker *-se*. Finally, some of the additive processes have purely phonological motivation in that the ever-shrinking forms are augmented by apparently meaningless sounds whose sole function seems to be to increase the phonological volume, perhaps in order to ensure better

auditory perception. Some phonological additions may be motivated by a desire for the euphony effect.

The state of affairs with the variations described here calls research that explores how to reconcile the unidirectionally reductive processes predicted by grammaticalization theory and the additive processes observed in the fluctuating patterns of variation.

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- ² Hopper and Traugott (2003[1993]:17) state it succinctly: counter-examples to unidirectionality are a reminder that language change is not subject to exceptionless physical laws, and diachronic universals are observed tendencies rather than theoretical absolutes.

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III



THEORY &
DESCRIPTION



VERBAL PREFIXATION IN SLAVIC: Z-PREFIXED PERFECTIVES IN POLISH

BARBARA BACZ
Laval University

VERBAL PREFIXATION in Slavic raises several problems, the most difficult and intriguing being the question of the relationship between the aspectual (grammatical) and the derivational (lexical) contribution of the verbal prefix (also referred to as a *preverb*). A related issue, essential for semanticists (of Cognitive Linguistics as well as Guillaumean persuasion) who believe that every form in language carries meaning, is the problem of the so-called ‘purely aspectual’ (Grzegorzczkova *et al.* 1984) or ‘empty’ (Shuyt 1990, Młynarczyk 2004) prefixes, i.e. preverbs added to an unprefixed imperfective base which do not change the lexical meaning of the verb, but cause the shift of the verb’s aspect into perfective.

The primary objective of this paper is to look at the meaning and function of one preverb only—the Polish preverb *z-* (realized as *z-*, *s-*, *ze-* *ś-*), the most frequent ‘purely perfectivizing’ verbal prefix in contemporary Polish (Grzegorzczkova *et al.* 1984:491). Because of the frequency and productivity of the preverb *z-*, *z-*-prefixed perfectives in Polish provide ample material for examining the exact semantic contribution of Slavic perfectivizing preverbs, a question of paramount importance in aspectual prefixation research. An immediate, practical goal of the present undertaking is to find out to what extent a classification (and description) of perfectives recently proposed by Janda (2006a, 2006b) for Russian can be useful in a semantic analysis of perfectivizing prefixes in Polish.

1. JANDA’S FOUR TYPES OF PERFECTIVES. In her recent work on aspect, Janda (2006a:2, 2006b:4) distinguishes four types of perfectives: **Natural Perfectives** (such as *zrobić* ‘get done’ in (1)), defined as perfectives which ‘describe the logical completion of the corresponding Imperfective Activity (and are thus denotationally equivalent to the Activity, differing from it only in terms of aspect)’; **Specialized Perfectives** (such as *z(e)szyć* ‘sew together’ in (2)), which ‘provide enough new semantic content to motivate the further derivation of corresponding Imperfectives’; **Complex Acts** (illustrated by *posiedzieć* ‘sit for a while’ in (3)), ‘which consist of an Activity combined with a limit, forming delimitatives, perduratives, ingresses, terminatives, and the like (aka much of what is often termed *Aktionsarten*)’ (Janda 2006a:2), and **Single Acts**, ‘which isolate a single cycle of a repeated Activity’ and are illustrated by *spytać* ‘ask a question’ in (4) and (9) as well as by the *-nąć*-perfectives, such as *mrugnąć* ‘blink once’ in (10)a and *chlapnąć* ‘splash once’ in (11).

The *z*-prefixed Polish **Natural Perfectives** *zrobić* ‘get done’ and *schować* ‘get hidden’ in example (1) form aspectual pairs with the corresponding simplex imperfectives *robić* ‘be doing’ and *chować* ‘be hiding’. According to the Slavic grammatical tradition, the term ‘aspectual pairs’ is used in its narrow sense, i.e. to identify the IMP/PERF couples whose members are considered as two forms of the same verb, which is normally interpreted that

they are viewed as having the same lexical meaning (Młynarczyk 2004:46).¹ Perfectivization by means of prefixation in such aspectual pairs is by some linguists (Shuyt 1990:293, 311; Młynarczyk 2004) referred to as ‘empty prefixation’.

(1) Aspectual Pairs with **Natural Perfectives**:

robić ‘be doing’ [IMP] *zrobić* ‘get done’ [PERF]
chować ‘be hiding’ [IMP] *schować* ‘get hidden’ [PERF]

a. Co *robiles* podczas mojej nieobecności?

‘What *were you doing/did you do* during my absence?’

Gdzie *chowasz* listy od swojej dziewczyny?

‘Where *do you hide/are you hiding* letters from your girlfriend?’

b. Co *zrobiles* podczas mojej nieobecności?

‘What *did you get done* during my absence?’

Gdzie *schowasz* te pieniądze?

‘Where *will you hide* this money?’

Following Janda’s definition of the second type of perfectives, based on the possibility of further derivation of related imperfectives (deperfectivization) by means of the imperfectizing suffixes *-ywa-*, *-ija-*, Polish *z*-prefixed **Specialized Perfectives** in example (2) are placed in the IMPERFECTIVE-PERFECTIVE-SECONDARY IMPERFECTIVE ‘trios’ (term used after Schuyt 1990):

(2) Z-prefixed Specialized Perfectives in trios:

<u>IMPERFECTIVE</u>	<u>PERFECTIVE</u>	<u>SECONDARY IMPERFECTIVE</u>
<i>szyć</i> ‘sew’	<i>z(e)zyć</i> ‘sew up/together’	<i>z(e)szywać</i> ‘keep sewing things together’
<i>bić</i> ‘beat’	<i>zbić</i> ‘beat together/up’	<i>zbijać</i> ‘beat together frequently’
<i>myć</i> ‘wash’	<i>zmyć</i> ‘wash away’	<i>zmywać</i> ‘wash away/up many times’

Complex Acts, which according to Janda’s (2006a:2, 2006b:5) purely temporal description have to be NON-COMPLETABLE and DURATIVE, are represented by the *po*-prefixed temporal delimitatives *posiedzieć* ‘sit for a while’ and *poczytać* ‘read for a while’ and by the *z*-prefixed ingresses *zglupieć* ‘become stupid, go nuts’ and *zrozumieć* ‘come to understand, realize’, listed in (3):

(3) **Complex Acts**

<i>siedzieć</i> ‘sit’	<i>posiedzieć</i> ‘sit for a while’
<i>czytać</i> ‘read’	<i>poczytać</i> ‘read for a while’
<i>rozumieć</i> ‘understand’	<i>zrozumieć</i> ‘come to understand, realize’
<i>glupieć</i> ‘go dumb repeatedly’	<i>zglupieć</i> ‘become dumb, start acting stupid’

Polish **Single Act** perfectives illustrated in (4) are formed by means of the preverbs *z-* and *za-* and are represented by verbs expressing naturally repeated activities (in their simplex-imperfective and their derived-perfective forms), such as knocking, blinking, asking questions:

(4) Z- and *za*-prefixed Single Acts

<i>pytać</i> 'ask questions'	<i>spytać/zapytać</i> 'ask a question'
<i>pukać</i> 'knock many times'	<i>zapukać</i> 'knock on one occasion'
<i>mrugać</i> 'keep blinking'	<i>zamrugać</i> 'wink/blink (a single episode)'

The semantic description of the four types of perfectives is given in (5). Each type is defined in terms of the following three **dimensions** of aspect and actionality proposed by the author (Janda 2006a:2, 2006b:7): CLOSED vs. OPEN, which 'is ultimately synonymous with [the opposition] Perfective vs. Imperfective'; COMPLETABLE vs. NON-COMPLETABLE, where COMPLETABLE defines 'a situation which has a goal that can be fulfilled, and thus naturally ends in a change of state'; and DURATIVE vs. INSTANTANEOUS, which captures the opposition of durative vs. punctual, where OPEN (i.e. imperfective-simplex) situations express an on-going duration (as in *krzyczeć* 'cry' [IMP]) or the cyclic repetition of instantaneous events (as in *pukać* 'knock' [IMP]).

(5) Janda's (2006b:15–16) description of perfectives:

Accomplishments	(COMPLETABLE, DURATIVE)
Achievements	(COMPLETABLE, INSTANTANEOUS)
Complex Acts	(NON-COMPLETABLE, DURATIVE)
Single Acts	(NON-COMPLETABLE, INSTANTANEOUS)

(NOTE: According to Janda (2006b:156), all four types of perfectives listed in (5) are CLOSED by definition; Accomplishments and Achievements form a union and are jointly referred to as Completion Acts; the group of Completion Acts comprises Natural Perfectives and Specialized Perfectives.)

2. A CRITICAL DISCUSSION OF JANDA'S CATEGORIES. Janda's claim that the traditional IMP/PERF 'pair' model does not provide a valid description of Slavic aspect is not new (see e.g. Sullivan & Bogdan 2002 and references quoted in Janda 2006b:26), but her semantic map of aspect and the underlying cluster model of perfectives based on four clearly defined types of the category appear very attractive as tools for a comprehensive analysis of the z-prefixed aspectual data in Polish.

2.1. PURELY ASPECTUAL Z-: NATURAL COMPLETION OR RESULTATIVE ACHIEVEMENT?

The choice of the adjective 'natural' to refer to perfective counterparts of imperfective simplex verbs denoting the same activity in true 'aspectual pairs' (Janda 2006a:3), such as *robić* [IMP] 'do' vs. *zrobić* [PERF] 'get done/finish doing' in (1), is truly felicitous for it well reflects the underlying assumption of Cognitive Linguistics that no form in language (and that includes preverbs) should be called semantically empty. Even the staunch advocates of the concept of 'empty prefixation' (Schuyt 1990, Młynarczyk 2004) admit that 'there is certainly a semantic distinction between the perfective and the non-perfective forms of any verb' which is reflected in the opposition between the completeness and the incompleteness of an action (Młynarczyk 2004:46).²

Natural Perfectives are defined as verbs expressing 'the logical completion of the corresponding Imperfective Activity' (Janda 2006b:4). Typically, they are created by adding a suitable perfectivizing prefix to the simplex form denoting an Activity and occur most frequently in aspectual-pair clusters.³ Since 'the rise of purely aspectual pairs... is generally viewed as a recent development', verbal prefixes which define the category of Natural Perfectives (mainly the preverbs *z-* and *po-*) are described as 'quite productive' in modern Russian (Schuyt 1990:311) and in modern Czech.⁴

The aspectual preverb *z-* is also very productive in contemporary Polish, as testified to by the large number of *z-*-perfectivized loan-verbs, such as *zwyryfikować* 'verify', *zrewidować* 'revise', *stelefonować się* 'phone', etc. Some representative aspectual-pair clusters formed by means of *z-*-prefixation applied to loan-verbs are listed in (6):⁵

(6) *Z*-prefixed loan-verbs as Natural Perfectives

<u>IMPERFECTIVE</u>	<u>PERFECTIVE</u>
<i>konstruować</i>	<i>skonstruować</i> 'construct'
<i>nacjonalizować</i>	<i>znacjonalizować</i> 'nationalize'
<i>filmować</i>	<i>sfilmować</i> 'film'

Z-prefixed loan-verbs in (6) should be treated as prime examples of the category of Natural Perfectives: They certainly describe 'the logical completion of the corresponding Imperfective Activity', and none of them contains sufficient lexical content to motivate derivation of a secondary imperfective, which would place them in the category of Specialized Perfectives. The verb *skonstruować* in (6), as well as its native equivalent *zbudować* 'build up' in (7) (along with the perfectives *zrobić*, *schować* in (1)), are often quoted as typical examples of purely aspectual prefixation, but their membership in the category of Natural Perfectives requires discussion. The problem is illustrated by the English translations many Natural Perfectives can have depending on context. E.g., the verb *zbudować* translates as 'finish building' (7)a, which duly expresses 'the logical completion of the corresponding imperfective', or as 'get (something) built' (7)b, which renders the meaning of 'bringing about/achieving a result'. The resultative effect of *z-*-prefixation, obvious in examples such as (7)b, allows to interpret *z-*-prefixed perfectives as a type of *Aktionsarten* (see Czochoński's 1975 'resultative *Aktionsarten*', discussed in Młynarczyk 2004:58–62), and as such (i.e. as *Aktionsarten*), they would have to be placed in Janda's category of Complex Acts. On the other hand, Janda (2006a:2) characterizes Complex Acts as expressly NON-COMPLETABLE, but since the sense of completion is clearly present in the 'achieved result' reading of these *z-*-perfectives (7)b, their classification as Complex Acts has to be rejected.⁶

- (7) a. Bazylikę w Łagiewnikach *zbudowano* przed przyjazdem Papieża.
 'The Łagiewniki basilica was *built* (*was finished*) before the Pope's visit.'
 b. *Budował* ten dom przez trzy lata, ale w końcu go *zbudował*.
 'He *was building* the house for three years, but in the end he *got it built*.'

- c. Jan jest teraz prawdziwym mężczyzną: *ożenił się, zbudował dom, posadził drzewo i spłodził syna.*

'Jan is a true (truly accomplished) man now: he *married, built* a house, *planted* a tree and *fathered* (begat) a son.'

An application of the Secondary Imperfective test to verbs of the type *zbudować, skonstruować* yields negative results (**zbudowywać, *skonstruowywać*), so they cannot be considered Specialized Perfectives, either.⁷ The Single Act possibility is also ruled out because Single Acts (just as Complex Acts) are characterized by Janda (2006b:15) as NON-COMPLETABLE. Thus, in terms of the four-way classification of perfectives, we are left with the initial, Natural Perfective option for these verbs. The semantic problem raised by the 'achieved result' reading illustrated by *zbudować* in example (7)b is a detail which could be solved by adding precision to the definition of the parameter COMPLETABLE, present in the joint characteristic of Natural and Specialized Perfectives which, in Janda (2006a:2), are both included in the larger category of Completion Acts.⁸ The fact that we needed to go through that whole round of reasoning suggests, however, that Janda's interpretation of the term *Aktionsarten*, and of the category Completion Acts, as well as her explanation of the parameter COMPLETABLE (in terms of telicity, to the apparent exclusion of achievement) require specification. Polish uses of *z*-prefixed perfectives in context (such as (7)a) suggest that the 'natural completion' reading is produced whenever the time of the activity's completion is clear in the speaker's mind (see also examples such as *Bracia Wright zbudowali jeden z pierwszych samolotów* 'The Wright Brothers *built (completed the construction of)* one of the first flying machines', where the time of the event is common knowledge to both the speaker and the hearer, just as the time of Pope John-Paul II's last visit to Poland, in (7)a, is well defined in the consciousness of the speakers of Polish). On the other hand, in the 'achieved result' reading of Natural *z*-Perfectives, as in (7)b, the time factor appears irrelevant. There are cases, however, where the two semantic effects (completion and achievement) seem blurred, as is the case in (7)c.

2.2. NATURAL Z-PERFECTIVES EXPRESSING SINGLE OCCURRENCE. The *z*-perfectivized loan-verb *zweryfikować* 'finish verifying/get verified' in example (8) points to the presence of another semantic element in the supposedly 'empty' aspectual preverb *z*-, the single-occurrence reading:

- (8) Musimy *zweryfikować* Pana dokumenty. *Weryfikujemy* dokumenty wszystkich cudzoziemców.
'We have to *verify* [PERF] your documents. We *verify* [IMP] documents of all foreigners.'

Zweryfikować is categorized as a Natural Perfective according to Janda's parameters for Completion Acts (CLOSED and COMPLETABLE), but in contrast to the Natural Perfective *zbudować* 'finish building/get built' in example (7)b, which emphasizes the activity's duration (the dimension DURATIVE), the activity *zweryfikować* 'get verified' in the context

of example (8) produces the semantic effect of a single-time occurrence (the dimension INSTANTANEOUS). According to Janda's (2006b) modified description of the four types of perfectives (5), the feature INSTANTANEOUS characterizes the category of Single Acts and the category of Achievements (which includes both Natural Perfectives and Specialized Perfectives). That modified characteristic allows us to classify one-time perfective activities such as *zweryfikować* as Natural Perfectives, with the characteristic COMPLETABLE and INSTANTANEOUS. A comparison of the semantic effects produced by the verbs *zbudować* in (7) and *zweryfikować* in (8) shows that Polish *z*-prefixed Natural Perfectives can be characterized as either DURATIVE or INSTANTANEOUS, which agrees with Janda's (2006b, but not 2006a) description of Completion Acts.

The *z*-prefixed aspectual perfectives in example (9): *spytać* 'ask a question' and *zblądzić* 'go astray (single occurrence)' illustrate another semantic dimension of aspectual prefixation: they both evoke one-time activities, but in a different way, a fact which is reflected in the different categories of perfectives they are ascribed to according to Janda's classification.

- (9) *Kto pyta nie błądzi, więc jeśli spytasz, na pewno nie zblądzisz.*
 'Who asks, will not go astray, so if you ask, you will surely not err.'
 [= 'Take counsel that you may avoid mistakes', a popular saying]

The sense of instantaneity is present with a different degree of intensity in each of the verbs, being clearly more pronounced in *spytać* than in *zblądzić*. The only way to explain that impression (to my mind) is by referring to the difference in the semantic make-up of the simplex imperfectives the two perfectives have been derived from. The activity *pytać* 'ask' could be interpreted as inherently frequentative for it can evoke a 'series of mini sub-events' (the events of asking individual questions), while the activity *błądzić* 'walk with no idea of how to get somewhere; not knowing the way' denotes a non-determined, continuous motion and would have the same aspectual characteristic [OPEN, NON-COMPLETABLE, DURATIVE] as the stock-example non-determined motion verb *chodzić* 'walk about' [IMP]) (Janda 2006a:5). Consequently, the *z*-prefixed perfective *spytać* could be viewed as 'an isolated single cycle of a repeated Activity', an interpretation which defines it as a Single Act with the characteristic: CLOSED, NON-COMPLETABLE, INSTANTANEOUS (Janda 2006b:15), whereas the *z*-prefixed perfective *zblądzić* would be classed as a Natural Perfective, i.e. a Completion Act with the characteristic: CLOSED, COMPLETABLE, INSTANTANEOUS, a description which groups it together with Achievement verbs such as *zweryfikować* (8). The conclusion following from the semantic analysis of the verbs *spytać* 'ask on one occasion' and *zblądzić* 'go astray, get lost (on one occasion)' in (9) is that Polish *z*-prefixed perfectives expressing one-time activities can represent either Natural Perfectives or Single Acts. I should remark, however, that I feel a certain uneasiness in referring to the instantaneous activity *zblądzić*, which evokes the moment of losing one's way, as an Achievement, a term which Janda's classification of aspectual situations (Janda 2006b:15) forces me to use. Nor am I perfectly comfortable with describing the activity of asking a definite question evoked by the verb *spytać* as 'a situation without a goal', a characteristic which follows from Janda's definition of the parameter NON-COMPLETABLE: 'A situation is COMPLETABLE if it has

a goal that can be fulfilled, and thus naturally ends in a change of state' (Janda 2006b:13). The verb *spytać* is inherently transitive (it contains a salient direct object *pytanie/pytania* 'question(s)' in its semantic make-up, evident in the verb's paraphrase *zadać pytanie/pytania* 'put forward a question/questions'), and the activity of asking a question appears to me as a purposeful act. Such counter-intuitive decisions are required by the current version of the proposed model and have to be accepted for the time being.

2.3. THE SEMELFACTIVE *-ną-* VS. THE ASPECTUALLY NEUTRAL *-ną-*. The single-occurrence meaning of Polish perfectives is rendered formally by two kinds of morphemes: the suffix *-ną-* (as in *krzyknąć* 'cry once'), or perfectivizing prefixes such as *za-* or *z-* (as in *zawołać* 'call out once', *schrupać* 'eat up crunching - one-time occurrence'), the case in point being the *z-*-prefixed perfective *spytać* 'ask once' discussed in section 2.2. The verbs listed in (10), which all contain the suffix *-ną-*, illustrate the variationist pertinence of this paper.

- (10) a. blink: mrugać - mrugnąć vs. zamrugać
 knock: pukać - puknąć vs. zapukać
 crunch: chrupać - chrupnąć vs. schrupać
 b. pull: ściągnąć < ciągnąć
 bend: zgiąć < giąć (gnę)
 cut: ściąć < ciąć (tnę)
 c. get slim: schudnąć < chudnąć (< chudy 'slim')
 get dry: zeschnąć < schnąć (< suchy 'dry')
 grow pale: zblednąć < blednąć (< blady 'pale')

Polish has two *-ną-* morphemes: the semelfactive suffix *-ną-* (from the Latin *semel* 'once' + *facere* 'do'), which derives Single Act perfectives from imperfective simplex bases, as in *mrugnąć* 'blink once' in (10)a, and the aspectually neutral, non-derivational morpheme *-ną-*, which happens to be quite frequent in *z-*-prefixed Specialized Perfectives (they do have corresponding secondary imperfectives), such as *ściągnąć* 'pull down' *zgiąć* 'bend down', *ściąć* 'cut down' (for more examples see Tokarski 1978: 232–3) listed in (10)b.⁹ The *z-*-prefixed perfectives exemplified in (10)c, such as *schudnąć* 'get slim', *zeschnąć* 'dry up', *zblednąć* 'go pale', represent an important group of *bona fide* Natural Perfectives derived from adjective-based imperfectives, but they are eliminated from Janda's classification because of their reference to states rather than activities. My comment concerning the *z-*-prefixed perfectives of that group, i.e., (10)c, is that even though their ultimate simplex bases denote states, they represent an important aspect of perfectivity (a change of state) and therefore, should not be excluded from the model of perfectivity. The same observation applies to single-occurrence *z-*-prefixed ingressives, such as *zrozumieć* 'get to understand', *zmarwić się* 'get worried', *zniechęcić* 'get to hate', etc. (see example (3)), which appear to conform well to Janda's description of Complex Acts but are also eliminated from the model because of their reference to states.

2.4. Z-PREFIXED SINGLE ACTS. Semantically, Single Acts are defined narrowly, as verbs which ‘isolate a single cycle of a repeated activity’ (Janda 2006b:3), and that’s in fact the only way they are presented in Janda’s aspect diagram and her semantic map of aspect. If taken *sensu stricto*, that description applies exclusively to the perfective members of aspectual pairs (such as *kichać/kichnąć* ‘sneeze’), which denote inherently **frequentative** activities, such as sneezing, coughing, knocking, plucking, blinking, etc. The verbs in (10)a illustrate typical frequentative activities, yet their description as Single Acts is not without problems. Because their single-occurrence meaning is rendered either by the semelfactive suffix *-ną-* or by the perfectivizing prefix *za-*, they appear to contain two Single Acts in their clusters: one derived by the *-ną-* suffixation and one derived by aspectual prefixation. The situation is illustrated by the two perfectives formed from the imperfective *mrugać* ‘blink’, where *mrugnąć* ‘blink once’ refers to one physical blink, and *zamrugać* ‘blink for a while’ refers to one episode in a series of blinking episodes. The semantic difference between one-time *mrugnąć* and one-time *zamrugać* follows from the semantic nature of the repetition in the two cases (single event: single episode of repeated events). The nuance is not captured by Janda’s model, where both *mrugnąć* and *zamrugać* have to be classed as Single Acts. *Zamrugać* cannot be treated as a Specialized Perfective because it does not motivate derivation of a secondary imperfective **zamrugiwać*. It cannot be a Complex Act either, because Complex Acts are defined as DURATIVE, and the characteristic INSTANTANEOUS is excluded from the category. A semiotic description of Polish aspectual pairs proposed by Młynarczyk (2004:124–26) accounts for the difference by including the feature of duration in the semantic definition of single-occurrence verbs, but a modification of Janda’s model in that direction would lead to a contradiction (what’s instantaneous cannot be durative), unless two kinds of Single Acts were to be proposed, a modification which would cause further undesirable changes in the model.

Example (11) illustrates an easier case of a cluster based on the inherently frequentative imperfective simplex *chlapać* ‘splash’ with two perfective derivatives expressing one-time occurrence: the Single Act *-ną-* derivative *chlapnąć* and the Specialized Perfective *z-*prefixed derivative *schlapać*.¹⁰

- (11) a. *Auta dziś strasznie chlapią. Właśnie schlapał mnie autobus.*
 ‘Cars *splash* terribly today. A bus has just *splashed* me.’
 b. *Janek chlapnął wodę na podłogę i jest mokra.*
 ‘Janek *splashed* water on the floor and it’s wet.’

The Specialized Perfective *schlapać* ‘make wet by splashing’ illustrates the lexical sense of ‘saturation with the effects of Activity’ (Bartnicka & Satkiewicz 2000) present in the non-aspectual content of the prefix *z-* in the group of perfectives including verbs such as *schlać się* ‘get oneself drunk (vulgar)’, *zgonić się* ‘get exhausted from running’ *zmachać się* ‘get tired after excessive activity’, etc.). The Single Act derivative *chlapnąć* ‘splash once’ is purely aspectual. This cluster causes no problems for Janda’s model. Yet, in the context of example (11)b, the Single Act verb *chlapnąć* ‘splash once’ conveys a strong impression of an achieved result, a characteristic excluded by the NON-COMPLETABLE definition of the category, so

there is another problem for the description of that type of perfectives. A possible solution might be to include the semelfactive *-ną-* verbs in the category of Natural Perfectives, with all the consequences of that move for the model.

3. CONCLUSION. First, *z*-prefixed perfectives are certainly not semantically empty for they express a sense of completion or achieved result (*zbudować*) as well as the sense of one-time occurrence (*spytać*). Second, Janda's (2006b) model of aspect is extremely attractive because of its simplicity and visual elegance, but in order to be able to use it for a description of verbal prefixation data in Polish in clear conscience, the following issues have to be addressed:

- a. An analysis of prefixed perfectives describing states (*schudnąć*, *zrozumieć*) has to be included in the model.
- b. In the description of Natural Perfectives, the term Achievement could be changed to account for natural completion of **negative** activities (*zblądzić*).
- c. The description and the graphic representation of Single Acts in the model of formal grams for aspect (Figure 4) should be changed to reflect the possibility (admitted in Janda 2006a) of forming Single Acts by prefixation (Russian *sxodit* 'round trip'; Polish *spytać* 'ask on one occasion').
- d. A proviso has to be made for the DURATIVE feature in Single Acts formed by prefixation (*zapukać* 'knock', *zamrugać* 'blink' vs. *zawołać* 'call out', *schlapać* 'splash'). If they were to be classed alternately, as Complex Acts, a possibility of the feature INSTANTANEOUS would have to be considered for the Complex Act category.

¹ Polish dictionaries (Dunaj 1996, Doroszewski 1980) indicate PERF or IMP counterparts of the verbal entries whenever possible thus reflecting the intuition of the language speakers as to which verbal forms are felt to be related solely by aspect. The pairings indicated in the dictionaries, however, do not always correspond to the views of individual linguists as to which verbs (especially in the case of prefixed perfectives) constitute an aspectual pair. In Janda's (2006a:3) cluster model of aspectual relations an 'aspectual pair' is represented by a cluster consisting of an imperfective Activity and a Natural Perfective.

² Schuyt observes that 'except in the rare cases of the type *soderzat*, *zaviset* in Russian, or certain loan-translations—a prefix is always connected with terminative meaning' and that purely aspectual opposition between a simplex and a prefixed compound is possible only if the activity denoted by the simplex contains (has a potential to express) a terminative meaning ('The non-terminative meanings are, as in the verbs of the Russian type *soderzat*, incompatible with perfective aspect, and therefore, not involved in aspectual opposition; here, the addition of a prefix always brings about a lexical change' (1990:311).

³ One would expect that Natural Perfectives should have a substantial representation among the different kinds of perfectives. However, according to Janda's research, aspectual-pair clusters consisting of only an Activity and a Natural Perfective 'account for only about 6% of Russian verbs'

- (Janda 2006a:3), Also in Polish, cases of purely aspectual prefixation are considered relatively rare (Grzegorzczkova *et al.* 1984:491).
- ⁴ In his research on verbal prefixation in Slavic, Dickey observes that *z-* is also the most productive prefix in Czech, whereas in Russian, the highest productivity status has been granted to the prefix *po-*: 'According to Chertkova (1996:123–24) *po-* is statistically the single most productive prefix in the perfectivization of loan verbs in Russian, followed by *pro-*, *za-* and *s-*' (2002:1).
 - ⁵ When they first enter Polish, loan verbs are often not defined for aspect and are therefore considered as bi-aspectual. They can be used in imperfective as well as in perfective contexts, e.g. *aprobować* 'approve' is IMP in *Właśnie aprobujemy pana projekt* 'We are just approving your project' [IMP] while it functions as PERF in *Na pewno po powrocie aprobuje twoją decyzję* 'He will certainly approve your decision after his return' (Grzegorzczkova *et al.* 1984:215) or *dedykować* 'dedicate' in: *Dedykuję tę książkę mojej żonie* 'I dedicate this book to my wife' [IMP] versus *Kiedys dedykuję tomik wierszy mojej córce* 'One day I will dedicate a collection of poems to my daughter' [PERF].
 - ⁶ In her excellent dissertation on Polish morphological pairing, Młynarczyk quotes Czochralski's (1975) interpretation of the well assimilated Polish loan verb *zreperować* 'to have repaired', 'derived from the imperfective *reperować* 'to be repairing' by applying the empty prefix *z-*', as a resultative *Aktionsart* (2004:62). Czochralski's interpretation agrees with my intuition as to the meaning of the *z-*-prefixed verbs under discussion.
 - ⁷ The Secondary Imperfective test checks the possibility of forming a secondary imperfective from the derived perfective (in Polish, usually by means of the suffix *-ywa-*, as in the trio: *szyć* 'sew' [IMP]: *z(e)szyć* 'sew together' [PERF]: *z(e)szywać* 'sew together many times' [IMP]). It is one of the three tests proposed in the literature for distinguishing between aspectual and non-aspectual pairs (for the description of the Secondary Imperfective, Historical Present and Negative Imperative tests see Shuyt 1990:312 or Młynarczyk 2004:51–2).
 - ⁸ The category of Completion Acts, distinguished in Janda 2006a (p.2) and mentioned in the discussion of Russian perfectivizing prefixes in Janda 2006b (p.16), is not listed among the possible aspectual situations in Russian enumerated in Janda 2006b (p.15); it seems that the author has decided to replace Completion Acts by two separate categories: Accomplishments (CLOSED, COMPLETABLE, and DURATIVE) and Achievements (CLOSED, COMPLETABLE, and INSTANTANEOUS) (Janda 2006b:15, diagram 3), but the relationship of these categories to Natural and Specialized Perfectives is not discussed.
 - ⁹ A comment on the meaning of *z-*-prefixed Specialized Perfectives is in order. In addition to making the simplex imperfectives perfective, *z-*-prefixation in examples such as (10)b and (2) adds to the meaning conveyed by the unprefixed imperfective the sense of 'a movement downward and out' derived from the original 'downward ablative' (i.e. motion downward from a landmark) and 'elative' (i.e. motion out of) senses of the Old Church Slavonic (OCS) meanings of the prefix *iz-* (cf. *ściągnąć* 'pull down' *zgiąć* 'bend down', *ściąć* 'cut down'; *zmyć* 'wash off'). In the history of Polish (but not Russian), the OCS prefix *iz-* coalesced with the OCS prefix *sъ-* which, in addition to the 'centripetal' (i.e. motion from many directions to a single landmark) meaning, present in *z-*-prefixed Specialized Perfectives such as *zeszyć* 'sew together', *zbić* 'beat together/ join together by beating' (2), also had the 'downward-ablative' sense among its various meanings. According to Dickey (2005), the coalescence of the two OCS prefixes in languages which have no prefix *iz-* (Czech, Slovak, Sorbian and Polish) has led to the creation of the purely perfectivizing

prefix *s-/z-* which is very productive e.g. in perfectivizing loan-verbs (6). The names of the *Aktion-sart* meanings of the OCS prefixes *iz-* and *sB-* are taken from Dickey (2005:727), who discusses the development of *s-/z-* in Slavic relying on the OCS examples and semantic categories originally distinguished by Słoński (1937).

- ¹⁰ Other clusters of the same type are based on the imperfectives: *chrupać* 'crunch', *chłastać* 'hit repeatedly with a thin object', *chłustać* 'splash with large quantities of water', *łupać* 'hit repeatedly (about pain)', *walić* 'hit repeatedly and with force', etc.

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QUANTIFICATIONAL PROPERTIES OF SLAVIC VERBAL PREFIXES

INGA B. DOLININA

McMaster University

SLAVIC LANGUAGES HAVE an extended set of verbal prefixes which are often called preverbs (van Schooneveld 1978, Paillard 1991, etc.). The lists of entries are approximately identical across the languages. The Russian set includes 19 items. Glossing the prefixes is a task far beyond the boundaries of this paper: all prefixes are polysemantic, since the meaning they confer on the final verb depends on a number of parameters. The most relevant parameters are the lexical meaning of the verbal base and the inner-aspectual (Vendlerian) semantics of this base. To give some idea of the domain of the meaning of prefixes, I discuss the list of Russian prefixes. I provide two types of glosses. Gloss (1) refers to the meaning of the preposition to which the prefix is related, if there is such a preposition; *raz-* 'one (time)', for example, is not a preposition but a number-word and is merely a homophone. If it were the same morpheme, it would be **roz* in Polish, which, like other Slavic languages, has *raz*. Gloss (2) represents the most basic and general meaning(s) associated with each prefix. Both glosses are to some extent based on interpretations proposed in the *Academic Dictionary of the Russian Language* (Jevgen'eva 1981–1984):

- | | |
|--------------|--|
| v- | 1) <i>v</i> 'in' 2) direction of action inside of some 'space'; intensity of action. |
| vz- | 1) –, 2) upward direction of action; sharp/sudden beginning of an action. |
| vy- | 1) –, 2) direction of action from inside to outside; completeness of action. |
| do- | 1) <i>do</i> 'to/till' 2) carry on an action until its natural end, or until some final result. |
| za- | 1) <i>za</i> 'behind', 2) start, result, or excess of an action. |
| iz- | 1) <i>iz</i> 'out' 2) spread an action on all the object(s), on all spatial dimensions of the object. |
| na- | 1) <i>na</i> 'on' 2) direction of the action to a surface; carry an action to full satisfaction, or to excess. |
| nad- | 1) <i>nad</i> 'over' 2) partiality of the action |
| o(b)- | 1) <i>o</i> 'about', 2) circular trajectory or result of an action. |
| ot- | 1) <i>ot</i> 'from', 2) movement away from; reciprocation of an action; etc. |
| pere- | 1) –, 2) action from one place to another, over numerous objects, taken in totality, etc. |
| po- | 1) <i>po</i> 'on, over', etc., 2) short duration of action; action over numerous objects; totality. |
| pod- | 1) <i>pod</i> 'under', 'down', 2) upward direction of action, close to something; partial action. |
| pri- | 1) <i>pri</i> 'close by', 2) achieving the goal/result of action; partial action. |

- pro-* 1) *pro* 'about', 2) direction of action through or around something; totality/result of the action.
raz- 1) – 2) partition a space/an object; direction of action from one locus to several loci.
s- 1) *s* 'with', 2) motion from different places to one place; putting entities together.
s- 1) *s* 'off of' 2) motion from top down.
u- 1) *u* 'near, beside', 2) direction of action from something; result of an action.

Despite close commonalities of the sets of prefixes (as forms) across the Slavic languages, network connections between the prefixes, both between the languages and inside one language, are quite complex. Thus prefixes in different languages that are equivalent in form differ in functions, grammatical meanings, combinatorial properties with a verbal base, types of ambiguities they can trigger, etc. Also, similar functions, grammatical meaning, etc. are expressed within one language by different prefixes. Still, all prefixes display two common features. First, they are highly polysemantic. Some examples are in (1):

- (1) *pisat'* ('to write') / *perepisat'* ('to rewrite') – prefix adds two components of meaning: repetition of the event and completeness/totality of the event)
idti ('to go') / *perejti* ('to cross over, make a crossing') – prefix refers to a special trajectory of an action: from one side to another side
čitat' / *perečitat'* – ambiguous:
 a. 'to read' / 'to re-read' – prefix adds the same components as in *perepisat'*
 b. 'to read' / 'to read' – prefix adds distributive meaning: action covers each item in a multiple actant

Second, all prefixes (with few exceptions) convert an imperfective verb into a perfective one, as in (2), where all simple forms are imperfective and all prefixed forms are perfective:

- (2) *čitat'* ('to read') / *pročitat'* ('to read through')
pisat' ('to write') / *perepisat'* ('to rewrite')
ezdit' ('to drive') / *ob'ezdit'* ('to drive around/through all the places')

The investigation of these prefixes is the story of a century-long debate involving numerous hypotheses about their nature. But still there is no consensus on any of the numerous questions. (See discussions in Krongauz & Paillard 1997.) I will mention only some of the issues under current debate: prefixes and aspectology; semantics of the prefixes in a wide sense (methodology of the very approach to the issue, polysemanticity of prefixes and consequent search for an invariant meaning or for a prototypical meaning); nature of interaction(s) between prefixes and the base verb; relations between prefixes and prepositions (if any).

1. THEORETICAL APPROACHES. Different theoretical approaches have attempted to find a coherent description of prefixes—Cognitive, Componential, Multi-layered Semantic,

Aspectological, Syntactic, Derivational, etc. (Bacz 2005, Flier & Timberlake 1985, Janda from 1985 on, Paillard since 1991, Rudzka-Ostyn 1988, van Schooneveld 1978, Zaliznjak 1995). I do not propose to solve all the problems or answer all the question in this paper, but I hope to shed new light on the properties of prefixes and to do it from a new perspective.

One of the problems in the investigation of prefixes has been the absence of a general view and a general discussion of all the prefixes as a holistic systemic network, either within one language or more so between the Slavic languages. The research has concentrated on describing one or two prefixes, without presenting them as a part of the holistic system. To a large extent this is understandable—the amount of information looks too large to be covered comprehensively in one study. Still, this affix-by-affix approach lacks generality in its observations and fails to determine the value of each prefix within a system. In this respect the description of affixes differs from the description of prepositions, where there are works in holistic investigation, e.g. Bennett 1978 and Sullivan 1998.

Considering all this, my immediate task in the investigation of prefixes is twofold—first, to attract more direct attention to the quantificational properties displayed by these prefixes and the role of this semantic component as a special layer in their overall meaning; and second, to view the set of prefixes as a system, as a network of form-function connections within one language and across Slavic languages. I believe this approach has the potential for insights into the semantic properties of verbal prefixes.

I claim that Slavic prefixes (as well as some suffixes, see (2)) are quantifiers, and thus are second-order predicates modifying the propositions named by the base verbs, which are first-order predicates. Unlike prefixes, prepositions are normally first-order predicates, naming spatial/temporal situations. I propose tentatively to call the specific quantificational meaning of the prefixes that of the ‘oneness’/discreteness of the event named by the base verb. This unity explains why prefixes always render Perfective meaning, which is associated predominantly with communicating an event holistically. Further, I suggest that this quantificational domain is autonomous from the more specific domain of their denotational meanings. In this capacity the prefixes have the qualities of first-order predicates which reflect dimensions, directions, trajectories of the space in which an action is taking place, just as prepositions do. I believe that prior investigations of prefixes concentrated on the second domain, basically neglecting its connection with the first one. My position also explains the existence of the so-called empty prefixes, which are considered to have no other function than an aspectual (perfectivization) one, but no meaning. In my interpretation such prefixes have no denotational component of meaning, but only a quantificational one.

2. SLAVIC VERBAL AFFIXES AS QUANTIFIERS. Most Slavic affixes can participate in quantificational oppositions (Cubberley 1994, Isačenko 1960, Maslov 1984, M. A. Sheljakin 1983, etc.). Here are some examples of Russian affixes in their capacity of quantifiers. These affixes can mark oppositions in both directions—from unmarked plurality of events to marked singularity, and from unmarked singularity to marked plurality.

Singularity marking is represented by three subtypes:

1. by punctual singularity denoting a singular action/event strongly restricted in time, as opposed to a homogeneous time-unlimited process (activity in Vendler's terms), as in (3). This meaning is usually marked by prefixes:

- (3) *kričat* ('to cry') / *vs**kričat* ('to cry out')
iditi ('to go/walk') / *z**ajti* ('to come in /pop in')
govorit ('to speak') / *ogovorit'sja* ('to make a minor mistake')

2. by semelfactive singularity denoting individualization of a micro-act in multiplicative verbs denoting a process consisting of a sequence of such micro-acts, as in (4). This meaning is marked by a specialised suffix, *nu-*:

- (4) *prygat* ('to jump/be jumping') → *prygnut* ('to jump once')
svistet ('to whistle/ be whistling') → *svistnut* ('to make one whistle')

Sometimes *nut*-marked verbs can combine with a singularity-marking prefix. But in such cases the semantic interpretation of the prefix is presented by its denotative component, which names the spatial direction of the action, as in (5):

- (5) *prygnut* ('to jump once') / *vs**prygnut* ('to jump on something')
*z**aprygnut* ('to jump on something with a difficult access')
*p**ereprygnut* ('to jump over')
*o**tprygnut* ('to jump off')

3. by delimitative singularity denoting a shortish process restricted in time, which represents a quantum or portion of a temporally unlimited process (Flier 1985) to which it is opposed, as in (6):

- (6) *ždat* ('to wait') / *p**ereždat* ('to wait for a certain time, while another event ends')
čitat ('to read') / *p**očitat* ('to read for some time')
iskat ('to search') / *p**roiskat* ('to search unsuccessfully and for a longish time')

Here the quantificational meaning strongly combines with a denotative meaning referring to temporal characteristics of the event. It must be noted that these temporal characteristics are a metaphorical extension of spatial relations, which is the primary denotational meaning of these prefixes.

Plurality marking is represented by the following subtypes:

1. by iterative plurality denoting repetition (of different types) of actions/events in time, as in (7):

- (7) *pisat* ('to write') / *p**erepisat* ('to rewrite')
xodit ('to walk/to visit') / *x**aživat* ('to walk/visit usually, repeatedly')

2. by resultative/cumulative plurality denoting either excessive prolongation of a state/process or excessive repetition of an action. Here a change of quantity of activity leads to a change of quality of activity. This transforms the very meaning of the predicate: from activity into a new state, as in (8):

- (8) *ležat* ('to lie') / *naležat'sja* ('to have lain to one's full satisfaction')
kormit ('to feed [someone]') / *zakormit* ('to stuff with food, to over-satiate')
spat ('to sleep') / *otospat'sja* ('to sleep long enough to become thoroughly slept out')

3) by distributive plurality denoting a multiplicity of situations due to individualization of the action of members of a certain group:

- (9) *padat* ('to fall') / *popadat* ('to fall individually')
probovat ('to taste') / *pereprobovat* ('to taste [many dishes] individually')

Three types of quantification are specifically productive: Semelfactive/Multiplicative, Delimitative, and Distributive.

3. CROSS-LINGUISTIC UNIQUENESS OF SLAVIC MARKING EVENT QUANTIFICATION. The unique cross-linguistic feature of Slavic languages in encoding event-quantification is two-fold: it is carried out by verbal morphology, and not lexically by determiners and adverbs (Dolinina 1999, 2005), and the variety of quantificational oppositions thus marked is highly diverse and can be taken as a basis for event ontology, which is a crucial issue for logicians, philosophers and linguists (Lewis 1975, Davidson 1967, Link 1998, Bach *et al.* 1995, Partee 1995, etc.). Surprisingly, the general theory of quantification, which stresses the rarity of verbal marking of **distributivity** in particular and quantification in general, never mentions Slavic data (see discussion in Link 1998), even though these languages discriminate more than 10 distributive oppositions (see Osipova 1983a, b). whereas in any other language at most three meanings are discriminated.

In sections 4–6 I discuss distributive oppositions in Slavic. The selection of distributivity as the centre of my interest is based on two factors. First, it is the major systemic actualization of quantificational properties in Slavic. Second, it has been neglected in non-Slavic discussion of quantification. Russian is used as a point of reference, but the study as a whole is based on parallel data from Polish, Czech, Serbian, Croatian, and Bulgarian. I discuss distributive constructions from two points of view: the ontology of semantic oppositions (types of distributive situations) actualized within distributive plurality, and the mechanisms of their encoding. To do so, I start with an outline of the theoretical framework within which I propose to analyse event quantification in general and Distributivity in particular.

4. GRAMMATICAL STATUS OF DISTRIBUTIVITY: NOMINAL OR VERBAL QUANTIFICATION? As discussed in Dolinina (2004, 2005), linguists differ on the grammatical status of distributivity, in particular whether it is a nominal or verbal quantification. I think that

individual positions depend grossly on the logical tradition of the study of universal quantifiers (*all, each*, etc.) as nominal-attached entities and on the data the linguist is working with. If distributive meaning is marked within a nominal group or as an argument of the verb, it is interpreted as nominal plurality. If the marking is on the verb, it is interpreted as verbal plurality. But what is marked nominally in one language is marked verbally in another. Here are parallel distributive constructions in Russian and English:

- (10) a. *Butylki popadali s polki*
 b. *Bottles fell from the shelf* (chaotically, one by one).
- (11) a. *Brat'ja pereženilis'*;
 b. *All the brothers got married* (each of them, without any particular order)

These differences in marking distributivity reflect their semantic ambivalence. On the one hand, they always actualize a situation with a multiple argument, locations, and thus they contain the idea of the plurality of items within groups. On the other hand, the actions of the members of these groups are individualized, thus implying the idea of distinctive singularity. In short, an event described by a distributive construction is understood as one event, but as one which consists of a set of individual events. All these peculiarities of distributive plurality allow me to interpret distributive plurality ontologically as a two-faceted type of plurality. Its semantics covers two different areas of quantification—that of the whole event as a repetition of individualized actions and that of the participants (objects) as members of a group participant in the event. Thus distributivity comprises both types of plurality, nominal and verbal.

The patterns of encoding this category in different types of language are quite diverse. The most favoured ones cross-linguistically are the following: universal quantifiers (the so-called determiner-quantification similar to English *each, one after another, all, they ... all*, etc); verbal affixes; reduplication; combination of Imperfective Aspect with achievement-type predicates; and specialized distributive verbs like *scatter, enumerate, distribute*, etc.

5. SEMANTIC TYPES OF DISTRIBUTIVE CONSTRUCTIONS. Basic Distributive meaning can be described as follows: it is represented when a situation contains a multiple argument representing a group of individuals, all of whose members are individualized with respect to their properties/activities (Dolinina 2005). In Slavic languages distributive interpretation is available for any of the arguments of the situation. One can construct a calculus of the possible semantic types of distributive plurality on the basis of which one of the actants and circonstants in a situation is multiple. There can be as many subtypes of distributive meaning as there are groups of individuals, objects, or locations in the situation. The existing descriptions of this phenomenon can be organized in the following system:

5.1. ARGUMENT DISTRIBUTIVITY is represented by the following Russian examples, the data on other Slavic languages is presented in Appendix 1:

1. *Subject Distributivity*: The situation has a multiple subject (usually an Agent). I repeat here examples (10) and (11) together in (12).

- (12) a. *butylki po-padali na pol*
 bottles DIST/SB-fell on floor
 'Bottles (all and each of them) fell on the floor'
- b. *bratja pere-ženilis'*
 brothers DIST/SB-married
 'All brothers (each of the brothers) married'

2. *Object Distributivity*: A situation has a multiple object (usually patient):

- (13) a. *Ona po-otkryvala okna*
 she DIST/OB-opened windows
 'She opened all the windows (each of them).'
- b. *Ona pere-bila (vsju) posudu*
 She DIST/OB-broke all crockery
 'She broke all the crockery/each and every piece of crockery.'

3. *Addressee Distributivity*: A situation has a plural addressee (and usually a multiple object)

- (14) a. *on raz-daril knigi detjam*
 he DIST/ADR-presented books children
 'He presented all the books to the children.'
- b. *on raz-dal mebel' sosedjam*
 he DIST/ADR-gave furniture (to) neighbors
 'He gave out his furniture to his neighbors'

4. *Totality/Finality Distributivity*, in which the action covers all entities of a multiple argument, and the event is exhausted.

- (15) *dinozavry vy-merli*
 dinosaurs DIST/SB-died/FINAL
 'Dinosaurs died out'

5.2. *SPATIAL (LOCATIVE) DISTRIBUTIVITY*. Spatial distributivity appears when a situation includes multiple spaces. This group of oppositions is represented by the following varieties:

5. *Diversative Distributivity*, in which actions of individuals start at one point and end at different points.

- (16) *pticy raz-letelis' (v raznye storony)*
 birds DIST/SGspace → PLspaces-flew (in different directions)
 'Birds flew away (from one place) in different directions'

6. *Cyclolocative Distributivity*: This is the opposite of the diversative: actions start at different points and end at one point.

- (17) *pticy s-letelis'* (v *sad*)
 birds DIST/PLspace → SGspace-flew (in garden)
 'Birds flew (from different directions) in the garden.'

7. *Ambulative Distributivity*: This situation consists of a sequential movement through separate points.

- (18) *ona obo-šla vse magaziny*
 she DIST/SG → SG → SG-walked all shops
 'She visited all the shops one after another'

8. *Dispersive Distributivity*: Events happen in different parts of a space occupied by some object.

- (19) a. *zemlja po-treskalas' / ras-treskalas'*
 soil DIST-cracked
 'The soil cracked (in numerous places)'
 b. *ona pere-mazala / iz-mazala / vy-mazala ruki kraskoj*
 she DIST-dirtied her hands with paint
 'She dirtied her hands all over with paint'

9. *Spatio-Total Distributivity*: This situation occupies an entire spatial location.

- (20) a. *on za-sadil sad rozami*
 he DIST-plant garden:ACC roses:INSRT
 He planted the whole of the garden with roses
 b. *on ob-ros / za-ros volosami*
 he DIST-grow hair:INSTR
 'He (his head) is all covered with (unkempt) hair.'

5.3. *MERELOGICAL DISTRIBUTIVITY: PARTITIONING*. This is a situation wherein one object is regarded as a unity (a kind of a mass entity) which can be broken into parts.

- (21) a. *raz-bit' stakan*
 DIST-break glass
 'to break a glass (into pieces)'
 (21) b. *raz-rezat' xleb*
 DIST-cut bread
 'to cut the bread (all of it into slices)'

6. CROSS-SLAVIC MARKING OF DISTRIBUTIVITY. The study of the semantic types of Distributivity and their marking in other Slavic languages was based on a specially designed questionnaire (*anketa*). This questionnaire included the major typologically possible semantic types and subtypes of distributive meanings, based partially on Dressler 1968 and Khrakovskij 1989 and extended by cases from various descriptive grammars. The languages surveyed were Russian, Ukrainian, Polish, Serbian, Croatian, and Bulgarian. Thus the sample includes the East, West and South Slavic branches. Serbian and Croatian are treated as different entries because they are not uniform in encoding some types of distributivity. The choice of languages was restricted by the availability of informants. I am deeply grateful to my informants, who patiently responded to more than 100 entries: Dr. Nina Kolesnikoff (Polish), Dr. Walter Smyrniw (Ukrainian), Milica Krneta (Serbian), Catherine Krasnik (Croatian), and Lidia Karamanova (Bulgarian). A general summary of these data is given in Table 1. (Unfortunately the space restrictions of the paper did not allow me to cite the full distributive constructions in which the prefixed verbs occur, but only the verbs themselves.) This table demonstrates that there is no strict congruence of form and meaning either inside or between the Slavic languages. So instead of conclusions I provide a preliminary analysis of the data on the marking of distributivity in Slavic.

7. ANALYSES OF THE SYSTEM.

7.1. BEFORE THE CURTAIN: PREFIXES AS FORMS. Four points stand out.

1. **Table 1** (overleaf) demonstrates that distributivity is marked persistently in all Slavic languages.
2. There is, however, no one-to-one relation between forms and functions: there is a pool of distributive meanings and there is a pool of prefixes.
3. There is no visible regularity of connection between meanings and prefixes, either intra- or inter-lingual. Some prefixes (e.g. *s-*, *ob-*) are highly persistent in marking one type of meaning and others (*po-* *pere-*, *raz-*) are highly polyfunctional.
4. The frequency of some prefixes is different across languages: for example, *po-* is roughly twice as frequent in Polish as in other languages. The frequency of *pere-* in Russian and Ukrainian is much higher than in Polish and somewhat higher than in Serbian. The prefix *iz-* is salient in the Serbian and Croatian examples.

So distributive plurality is regularly marked in Slavic languages, but at first glance it seems that in many cases the choice of an affix is semantically inexplicable. The question is whether it is possible to propose an interpretation which will permit us to minimize these discrepancies and find a network of connections. I conjecture that there are explanations for most of the discrepancies, and that those which will remain unexplained are minimal.

7.2. BEHIND THE CURTAIN: PREFIXES AS MEANINGS AND FUNCTIONS. I believe that two systemic factors are responsible for the above discrepancies.

Semant.	Russian.	Ukr.	Polish	Czech	Srb.	Cr.	Bulg.
Sb. Dist	po-padali	po-	po-	po-	po-	po-	iz-/izpo-/na-
	po-vskakali	po-	po-	po-	po-	po-	na- / izpona-
	po-ujezžali	po-	po-	roz-	(—)	(—)	izpo-
	po-umirali	'po'	po-	po-	po-	po-	iz- / izpo-
	pere-ženilis'	pere-	prze-	po-	po-	po-	izpo-
Ob. Dist.	ras-kidal	roz-	poroz-	roz-	raz-	raz-	raz-
	raz-vesil	roz-	poroz-	roz-	raz--	po-	na-
	ras-kupili	roz-	roz-	roz-	po-	po-	iz-
	po-otkryvala	po-	po-	po-	po-	po-	iz-/izpo-
	po-kidal	po-	po-	na-	po-	po-	na-
	po-prjatal	po-	po-	po-	po-	po-	izpo-
	pere-bila	pere-	po-	po-	po-	po-	izpo-
	pere-budila	pere-/po	—	(—)	(—)	(—)	izpo-
	pere-brala	pere-	—	pře-	pre-	pro-	pre-
	pere-bolel	pere-	?prze-	(—)	pre-	pre-	pre-
Adr. Dist.	raz-dal	roz-	poroz-	roz-	raz-	raz-	raz-
	raz-prodal	roz-	po-	roz-	raz-	raz-	raz-
	raz-lila (sup detjam)	roz-	po-	na-	raz-	raz-	(—)
Totality/ finality	vy-merli	vy-	wy-	vy-	iz-	iz-	iz-
Diversative	raz-letelis'	roz-	roz-	roz-	raz-	raz-	raz-
	raz-bežalis'	roz-	po-	roz-	raz-	raz-/poraz-	raz-
	raz-jexalis'	roz-	po-	roz-	po-	raz-	raz-
Cycloc.	s-letelis'	s-	s-	s-	s-	s-	do-
Ambul.	ob(o)-šla	ob-	ob-	ob-	ob-	ob-	ob-
Disps.	po-/ras-treskalas'	po-	po-	po-	po-	ras-	na-
	po-/razo-rvalos'	po-/roz-	po-/poroz-	roz-	is-/po-	po-/iz-	izpo-/razpo-
	po-/is-kusali	po-/i)s-	po-	po-	iz-	iz-	izpo-
	po-/ob-sypala	po-	po-	po-	po-	po-	po-/ na-
	po-bryzgala	ob-	ob-	po-	po-/iz-	po-/ -iz-	na-
	pere-/vy-/iz-mazala	ob-	po-	u-	u-/za-	za-/ u-	iz-
Totality	za-sadil (sad tsvetami)	ob-	za-	—	za-	za-	za-
	ob-šaril (veš škaf)	ob-	prze-	pro-/ o-	pre-	pre-	pre-
	ob-/za-ros (volosami)	ob-	ob-	ob-/ za	ob-/za	ob-/ za-	ob-
Quasi-Distr.	raz-bit'/ot-bit'	roz-	roz-	roz-	raz-	raz-	s-
	raz-rezat'/ot-rezat'	roz-	roz-	roz-	is-	iz-	raz-
	po- na-/ras-krošit'	po-	po-	na-/raz-	iz-/raz	raz-/iz-	na-

Table 1. Types of distributivity and their encoding.

One systemic factor is changes in the ways of marking distributivity throughout history (Knjazez 1989:136). There are three stages in rendering distributive meaning: the first stage is characterized by *is-/iz-*; the meaning of totality implied by this prefix goes back to Church Slavonic (Khaburgayev 1974:330); the second stage: *po-/ (iz)po-/ -poz-*, the third stage: *pere-*. From this point of view, Russian and Ukrainian have shifted a long way toward the third stage, Polish remains in the second stage, and Serbian and Croatian still preserve a considerable amount of marking of the first stage. So the differences in marking distributivity are partially due to diachronic processes.

The other systemic factor is that in some cases the prefix communicates not just distributive quantification but also denotative meanings. The fact that one type of distributive meaning can be expressed by different prefixes and that one prefix can express more than one type of distributive meaning shows that the choice of prefix is often determined not only by the type of distributivity but also by other semantic factors. These other factors can differ from one language to another.

In some cases a prefix seems to be tied to one type of distributive plurality. Such groups of prefixes as *vy-*, *o(bo)-* and *s-* (in its Cyclolocative meaning) represent to a certain extent a semantically stable layer of verbal prefixation. These prefix groups are often associated with lexical distributives, that is, with unproductive patterns which evidently have fossilized at an earlier stage of language development and thus do not have the flexibility for dynamic changes. They are predominantly associated, the above Slavic material suggests, with certain types of distributives: totality/finality of actants, ambulative distributivity, or cyclolocative distributivity.

The prefix group *raz-* in all Slavic languages denotes different types of separation (different directions, different parts, different locations, etc.), much more strongly than this or that type of distributivity. Thus, when the semantic component of separation is actually or even potentially presented in any type of distributive construction, it becomes the centre of marking. This fact conforms to Frajzyngier's (1985) generalization that the plural reading of a construction (which is actualized in its marking) is tied to the component which is hierarchically subordinate, semantically or syntactically. Thus, I claim that, if plurality is to be marked, there is more chance that it will be marked by means of the mechanism normal to the marking of the last component. Since the idea of separation in space refers to locatives, which come after subjects and objects in the semantic hierarchy, the marking goes by means of *raz-*. So even though the construction represents subject, object or addressee distributivity, if the idea of spatial separation is present, the construction is marked by *raz-* and not by a more appropriate *po-* or *pere-*. In Polish, Serbian and Croatian, such cases sometimes have a double marking *po-roz-*.

The prefix groups *po-*, *pere-* and *iz-* (if we ignore diachronic considerations) denote different subtypes of distributivity. The prefix group *po-* seems to express distributivity most systematically and in the most general way. In Polish it has developed as the absolutely dominant way of expressing all actant and dispersive types of distributivity, with only occasional exceptions where *s-*, *obo-* or *wy-* are used. In Russian and to some extent in Ukrainian, there is a semantic distribution between *po-* and *pere-*. *Pere-* seems to be used for conveying an additional meaning of totality (full involvement of the whole multiple actant

in the action: *perestreljat' vse x utok* 'shoot every one of the ducks' *perebudit' vse x detej* 'wake up every one of the children') or perhaps of succession (one after another: *pereprobovat' vse bljuda* 'taste each of the dishes'). These shades of meaning are practically ignored in Polish, and to a large extent in Serbian and in Croatian.

It is difficult to draw any conclusions concerning *iz-*, because the sample is too small to support any generalization.

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INVESTIGATING THE SEMANTICS-SEMIOTICS INTERFACE THROUGH TEXTUAL ANALYSIS

RENNIE GONSALVES

Brooklyn College

ACCORDING TO EMILE BENVENISTE, 'language combines two distinct modes of meaning which we designate on the one hand as the *semiotic* mode, and on the other [as] the *semantic* mode' (1969:129). For Benveniste, an understanding of these two modes of meaning is crucial to an understanding of the structure of language, which he describes at some length in another essay entitled 'The Levels of Linguistic Analysis' (1971). 'Semiotics,' he says, 'designates the mode of signification proper to the linguistic *sign* that establishes it as a unit' (1969:129). Furthermore, according to Benveniste, 'the only question to which a sign gives rise... is that of existence [which] is answered yes or no: *tree-song-to wash*... and not **tro-rong-dawsh*' (*ibid*:130). On the other hand:

With the semantic, we enter into the specific mode of meaning which is generated by discourse. The problem raised here is that of language as producer of messages. However, the message... is not the sum of many signs... on the contrary it is meaning (*l'intente*), globally conceived, that is actualized and divided into specific signs, the *words*. In the second place, semantics takes over the majority of referents, while semiotics is in principle cut off and independent of all reference. [The] semantic order becomes identified with the world of enunciation and with the universe of discourse. (*ibid*)

It seems accurate to paraphrase Benveniste as suggesting that for language the semiotic mode is concerned with, in Saussure's terms, words (as 'sound-images') and their associated concepts in the mind, signifiers and their signifieds (1959:66–67), or, in Frege's terms, words and their associated senses. But unlike Frege, who suggested that the sense of a word is its mode of referring (1980:57), thus claiming that sense determines reference, Benveniste suggests plainly that 'semiotics is in principle cut off and independent of all reference' (2003:130). Curiously, something exactly like this independence of sense from reference is what Jerrold J. Katz's (2004) autonomous sense theory (in his *Sense, Reference, and the Philosophy of Language*) also suggests. That is, the independence of the theory of sense from the theory of reference in Katz's theory of meaning seems to correspond very closely to what Benveniste suggests concerning the independence of semiotics from all reference.

One important consequence of this separation of sense from reference is that it helps to solve certain problems concerning meaning-related concepts like analyticity debated in the philosophy of language. For example, according to Katz it protects analyticity from Putnam's thought problem of cats really being robot spy devices (Katz 2004:128–31). Briefly,

Putnam's thought problem asks the question: What happens to the analyticity of the sentence 'Cats are animals' if we find out that cats are really robot spy devices? Analytic sentences are supposed to be true on the basis of word meaning alone, but Putnam's thought problem suggests that facts about the world could change their truth value. Katz's response is basically that there is only a problem here if we insist on Frege's notion of sense as completely determining reference. However, if, as Katz proposes, sense and reference are in separate domains, with sense mediating rather than determining reference, then:

The analyticity of ['Cats are animals'] depends on whether or not the sense properties and relations of 'cat' remain the same after we discover that the referents of our applications of it have been automata. The question whether or not the reference remains the same is beside the point. (2004:131)

In his *Foundations of Language*, Ray Jackendoff, for somewhat different reasons, describes a model of grammar that not only treats various components separately, but also sees a need for a bit of freedom for the way in which these components interface with each other:

We should not expect an isomorphism: syntax should not (alone) determine semantics, as in mainstream generative grammar and many versions of formal semantics; but neither should semantics entirely determine syntax, as often asserted in cognitive grammar. It is in the character of interfaces everywhere in the f-mind to be 'dirty'; there is no reason to expect more here. (2003:427–28)

And of particular relevance to what we have so far chosen, following Benveniste, to call semiotics (sense) and semantics (reference), Jackendoff's grammar makes use of two broadly corresponding distinct 'tiers' of meaning by analogy to the use of tiers in phonology: a descriptive tier containing aspects of the conceptual structures of sentences, and a referential tier in which aspects of reference and referential dependencies are represented. Jackendoff uses his conceptual semantics to analyze several different kinds of sentences on the descriptive, referential, and information structure tiers before going on to briefly sketch features of longer discourses, such as narratives. What I would like to do here, then, is to make use of Jackendoff's analytical approach to investigate the semiotic-semantic interface by looking at some rough representations of several crucial sentences from a 'real world' text, a narrative, in order to illustrate the ways in which these two 'modes of meaning' interact, and to offer some suggestions as to reasons for treating them separately.

The text I will use for analysis is a fairly substantial narrative. Since space does not permit us to analyze the conceptual and referential details of every sentence in this text, and since, further, what we need to show here does not require such a lengthy analysis, we will use Roman Jakobson's functions of language to focus our attention on one of the sentences of the text that stands out because of its emotional salience for the teller; we will then track down the referential connections between this sentence and other sentences in the text in order to investigate the nature of the semiotic-semantic interface.

1. THE ANALYTICAL TOOLS. Jakobson (1960) first sketches the six elements of the message situation: the addresser, the message, the addressee, the context, the contact, and the code. When the message focuses on or draws attention to a particular element of the communicative situation, the addresser exercises one of the communicative functions: the emotive, the poetic, the conative, the referential, the phatic, and the metalingual functions. Thus, when the sentence focuses on the addresser, the emotive function is exercised, common, for example, in lyrical poetry; focus on the message itself gives us the poetic function, as in any creative use of language; focus on the addressee, perhaps in a sentence that is used to try to persuade the addressee into believing or doing something, gives us the conative function; focus on the context, especially when we want to explain or describe a situation or circumstance, gives us the referential function; focus on making contact between addresser and addressee, as in greetings, gives us the phatic function; and finally, focus on the code, as in drawing attention to the grammatical aspects of a message, such as its meaning, gives us the metalingual function. Of course, combinations of these functions may be engaged almost simultaneously. For example, at the beginning of Marc Anthony's famous speech we have both the phatic and the conative functions brought into play: 'Friends, Romans, countrymen, lend me your ears.' However, according to Jakobson, a particular discourse will often focus throughout on one of these functions, while occasionally making use of others. Thus, Marc Anthony's speech as a whole, perhaps because of its political nature, is primarily conative in its focus on garnering the support of the Roman masses. Also of interest to us in the following textual analysis, the poetic function, according to Jakobson, 'by promoting the palpability of signs, deepens the fundamental dichotomy of signs and objects' (*ibid.*: 112).

Before going on to our text, we will look briefly here at the representation of a sentence on Jackendoff's descriptive tier (2002:6):

- (1) Conceptual/semantic structure of 'the little star's beside a big star':

$$\begin{array}{l} \text{a. [[is ([the little star], [beside [a big star]])]] } \\ \left[\begin{array}{c} \text{Situation} \\ \text{PRES} \end{array} \left[\begin{array}{c} \text{State} \\ \text{BE} \end{array} \left(\left[\begin{array}{c} \text{Object} \\ \text{[TYPE:STAR], DEF, [} \end{array} \right] \begin{array}{c} \text{LITTLE} \\ \text{Property} \end{array} \right] \right), \right. \\ \left. \left[\begin{array}{c} \text{Place} \\ \text{BESIDE} \end{array} \left[\begin{array}{c} \text{Object} \\ \text{[TYPE:STAR], INDEF, [} \end{array} \right] \begin{array}{c} \text{BIG} \\ \text{Property} \end{array} \right] \right] \right) \right] \end{array} \right]$$

This representation of the conceptual structure of this sentence shows us that here the verb *be* is a two place predicate with one argument place filled by an object, some definite star with the property of being little, and the other argument place filled with the concept of a location, namely beside some indefinite, big star. Already present on this descriptive tier of the representation of the meaning of this sentence are elements that will get interpreted further at the referential tier: in particular, the two objects and their relative positions.

2. THE TEXT. We will move on now quickly to a brief analysis of our text. To give a little background, it is a story told by a Carib woman who had spent fifty years working as a midwife on the island of Saint Vincent in the West Indies. Saint Vincent is a very small

(about 112 square miles) volcanic island with an active volcano which erupted very violently in 1902, when it caused the deaths of some 2,000 people and devastated the northern one-third of the island where the volcano is located. The Caribs who are now left on Saint Vincent are the remnants (our storyteller used the more poetic word ‘crumbs’) of the original inhabitants of the island, who fought determinedly against British occupation during the last decade or so of the eighteenth century, but then were rounded up and shipped off to the tiny island of Roatan just off what is now Belize, where their descendants make up a still identifiable Carib community. The Caribs, who came to Saint Vincent some 200 years before Columbus ‘discovered’ the islands of the West Indies, were skilled in canoe-building, and came up the chain of islands in their canoes from their original homes on the South American mainland. Our storyteller, Mrs. Mabel Hooper, was ninety years old when she was interviewed in 1996, and her story is what her grandfather told her about the 1902 eruption of La Soufriere, the volcanic mountain in Saint Vincent.

I have divided the text into five sections for ease of reference. In addition, these five sections each seem concerned with a distinct stage of the narrative. Here is section 1:

1. Hooper: [s1] He tell me when the Soufre goin to erupt, dey started to see lots of small ting... [s2] You know , you know dose boys dus mek some little boat on the sea here? [s3] Yes... lots of little boats sailing out from Morne Ron goin out. [s4] He doan know whey dey goin.

[s5] Small boat with white sail. [s6] He say he callin the people a dem and showin dem because he live more pon the hill to the beach on Morne Ron.¹ [s7] And when he call the others and dey come, dey lookin at de little boats with white sail early morning and dey goin. [s8] Dey doan see when dey come back. [s9] Late evenin dey will see dem again goin. [s10] Dey doan know where dey went.

This section seems to be devoted to the mysterious appearance of ‘small boats with white sail’ just prior to the eruption. As such, it sets the stage for the eruption, with the suggestion that the ‘small boat with white sail’ were harbingers of the eruption. Apart from s2, which interrupts the ‘story line’ to ask a question of the addressee and thus is conative, the sentences here are dominantly referential, being devoted to describing the context (for the notion of the ‘story line’ in narrative, see Longacre 2006; it might be that most of the sentences in this story involve verbs using the unmarked Saint Vincent Creole version of the past tense—undoubtedly an example of variation from the prevailing tendency of the storyline to be expressed in a manner that is more obviously in the past tense).

Section 2 presents an explanation of these otherwise mysterious boats, introducing the idea that the people on the boats actually lived ‘in the crater’ (pronounced by Mrs. Hooper the same as the word ‘creator’).

2. Hooper: [s11] And it wasn’t a month after, the volcano start. [s12] So the bigger older people now give in, dose are the people who were livin in the crater. [s13] So dey sailin out dey vessel goin. [s14] **Dat is what dey told me too.** [s15] Because dey

doan know whey dey come from. [s16] White, white boat and sail. [s17] Dey ain seein people, but they see the boat.

Again the sentences are all referential with the notable exception of s14 (here noted in bold), which refers directly to the teller, and so qualifies as an exercise of the emotive or expressive function.

Section 3 seems devoted to explaining how Mrs. Hooper's grandfather and the people around him escaped from the area near the volcano as the eruption began:

3. Hooper: [s18] Well dey fine out that the Soufre was goin to erupt. [s19] And my... my grandfather told me is ... and how all dey did get to move out from the Soufre

[s20] He say well we see it start to smoke, and we hear rollin, and we feel like the earth shakin. [s21] And everybody pick up, and dey have boat, and dey leave out Morne Ron. [s22] Dey ain go so. [s23] Dey come dis way. [s24] Dey go a in town. [s25] An de Soufre sweep down de country.

[s26] He say dey have five days out, and dey still was feelin shakin.

The sentences in this section are again mostly referential. s25, however, illustrating the poetic function, contains a metaphor of the lava flows from the Soufriere volcano as a giant broom that swept the mountains of the island. The suggestion of agency in the metaphor is especially notable, and might be a clue to the larger or deeper meaning of the text.

Section 4 is concerned with the tentative moves at investigating the post-eruption situation, and section 5 talks about the courageous return of the people to their life on the land around the volcano.

4. [s27] Some a dem in boat come up where dey can see what is happening on the land.

[s28] But dey say a little puff a smoke was comin out from the crater. [s29] But de crater had plop down. [s30] Dey say it plop down, but jus a circle leave down dey, with a little water.

[s31] And when nothing coming, yet again nothing happenin, nothing happenin, well the bigger men dem now start to stroll to see what can be done and what is happenin.

[s32] And dey go up. [s33] Dey get up de road, and dey get up pon de hill. [s34] He say dey doan see no water down dey. [s35] Jus de empty bottom. [s36] As you haul out a foundation and you see de naked dirt.

5. [s37] From dat dey began to make back dey cultivation. [s38] And dey go back

dey. [S39] I doan remember what he tel me..... de government give dem land around in de area. [S40] And some a dem build dey little house, and dey still go back dey, and build dey, and stay dey, and work de land.

3. THE ANALYSIS. Now, with respect to the semiotic mode of meaning, the dominant recurring concepts that seem to filter up throughout the story are the concepts associated with the volcano, the boats, the sea, the land, and the people. These five terms have a strong presence, either explicitly or implicitly, in each of the five marked out parts of the story. As we have seen, the Caribs were skillful boat-builders, and the emphasis, especially towards the end, on the land and the people hints at elements in the tragic past of the Caribs of Saint Vincent.

Now beyond the general hints at the Carib past mentioned earlier, the heart of the story seems to reveal a more specific connection which the storyteller almost shyly hints at in sentence S14 in our section 2 of the story, 'dat is what dey tole me too.' This is the only sentence in the narrative that carries the expressive function, with the 'me' indicating its focus on the narrator. Let us look first at how it gets represented on the descriptive tier. We will need to work out the reference of 'that' by looking at earlier sentences in the narrative. The following representation of the semantic/conceptual structure of this sentence is a very rough, tentative attempt to render the meaning of this sentence in a manner similar to that found in (1) above, Jackendoff's (2002) representation of the semantic/conceptual structure of 'the little star is beside a big star.'

(2) Conceptual/semantic structure of 'dat is what dey told me too':

a. [is ([that] , [what [told ([they] , [too [me])])])]

$$\left[\begin{array}{c} \text{PRES} \\ \text{Situation} \end{array} \left[\begin{array}{c} \text{BE} \\ \text{State} \end{array} \left(\left[\begin{array}{c} \text{THAT} \end{array} \right], \left[\begin{array}{c} \lambda x \\ \text{Proposition} \end{array} \left(\left[\begin{array}{c} \text{PAST} \\ \text{Event} \end{array} \left[\begin{array}{c} \text{TELL} \\ \text{Event} \end{array} \right] \right] \right) \right] \right) \right] \right] \right]$$

$$\left(\left[\begin{array}{c} \text{THEY, 3 PLU} \end{array} \right], \left[\begin{array}{c} \text{ME, 1 SING} \end{array} \right], \left[\begin{array}{c} \text{X} \\ \text{Proposition} \end{array} \right] \right) \right] \right]$$

Because of the obvious difficulty of reading such labeled bracket diagrams, Jackendoff also uses corresponding tree diagrams; **Figure 1** is an attempt to represent (2) in this tree-diagram format. In general, the double lines are attached to functions, while the single lines are attached to arguments; THAT, THEY, ME, and X can be thought of as zero argument functions. The four pronominal expressions in the sentence—*that*, *what*, *they* and *me*—are represented here simply as their corresponding forms, together with information about person and number, except that the operation of the relative pronoun *what* is represented using lambda extraction following Jackendoff's treatment of a similar relative clause (2002:384–87). Now, if we look at the context of this sentence in part 2 of our story, the 'dat' of sentence (2) would be taken as referring back to the meaning of the sentence 'those are the people who were living in de crater,' a portion of sentence S12. **Figure 2** is an attempt to render the representation of this sentence on the descriptive tier.

Now at this point, if we try to locate the reference or antecedent of 'those' of the sentence in S12, we encounter the problem that there is no good candidate constituent in any of

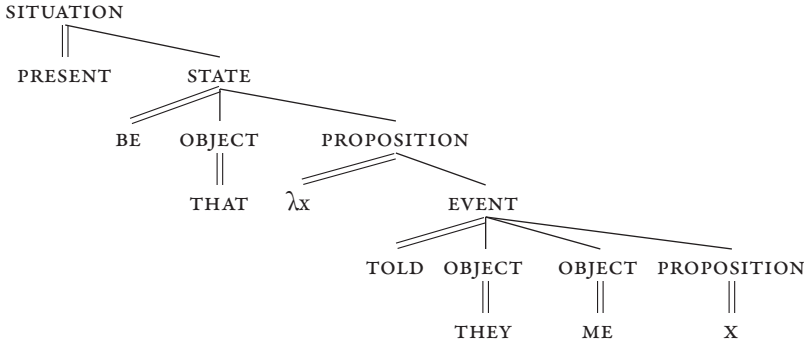


Figure 1. The conceptual structure of that is what they told me too.

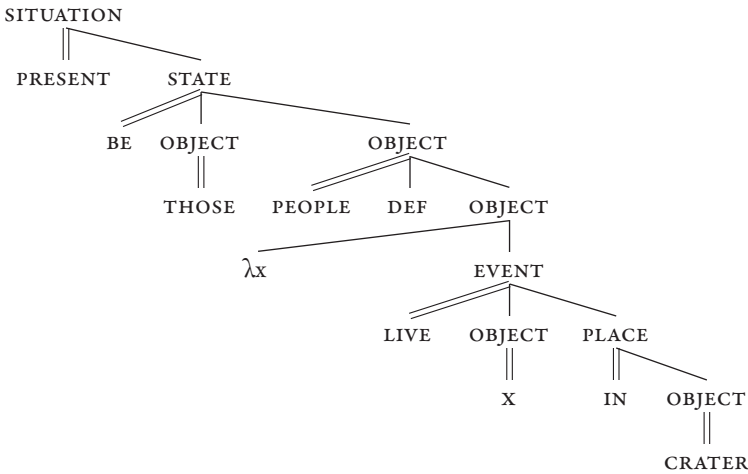


Figure 2. The conceptual structure of those are the people who were living in the crater.

the sentences before this for these people who lived in the crater. Clearly, what is intended is that the people who sailed the ‘little boats with white sails’ are the people referred to by ‘dose’ in S12. What we might suggest here, consistent with Jackendoff’s own analysis in similar circumstances, is that the lexical representation of the noun ‘boats’ or the verb ‘sail’ will have in what James Pustejovsky refers to as their qualia structure information that will specify that people are involved in sailing boats (Jackendoff 2002:369–73). If, for example, we consider Pustejovsky’s representation of one sense of the verb *drive*, we see something like the following (1995:114):

Drive

- EVENTSTR = [$E_1 = e_1$: process, $E_2 = e_2$: process, ...]
- ARGSTR = [ARG1 = x:human, ARG2=y:vehicle]
- QUALIA = [FORMAL = move(e_2 ,y), AGENTIVE = drive_act(e_1 ,x,y)]

It thus seems quite reasonable to suggest the following, then, as at least part of the representation of a closely corresponding sense of the verb *sail*, the one that seems to be used in our narrative text:

Sail

EVENTSTR = [E₁ = e₁: process, E₂ = e₂: process, ...]
 ARGSTR = [ARG₁ = x:human, ARG₂=y:boat]
 QUALIA = [FORMAL = move(e₂,y), AGENTIVE = sail_act(e₁,x,y)]

In any event, what is clear from our text is that referential pronouns can, as it were, look inside of the qualia structure of words to secure reference. Another way to look at the referential relations here is to say that a referential claim about the act of sailing entails a referential claim about the existence of boats and people sailing them, and the latter then becomes the antecedent of 'dose' in S12.

Such a referential dependency relationship in which a non-constituent referentially licenses a subsequent constituent suggests that the relationship between the semiotic or sense structure of words, and their semantic or referential structure is a complex one that probably requires that these two structures be represented on distinct levels of analysis. In addition, the relationship between these levels, their interface rules, must function, as Jackendoff suggests, with a certain degree of freedom. Perhaps, then, what Putnam's thought problem should really drive home to us is that the human imagination requires just such a loose connection between the conceptual structures of sentences and their referential relations to the world. After all, we have no problems imagining the counterfactual circumstance that Putnam's thought problem suggests. This same conclusion as to the need for a loose connection between sense and reference can be drawn from our narrative text.

4. THE TEXT AND THE WORLD. I believe we can find a real-world suggestion of the identity of 'the people who lived in the crater' in archaeological evidence in an area within a few miles of Rose Bank, where our storyteller lived. In a fascinating article about some interesting archaeological features of this area, Claudius Fergus discusses the significance of the petroglyphs or rock carvings 'atop the Chateaubelair/Petit Bordel promontory':

The worldview of the native peoples of the Caribbean was conditioned by aspects of the macro-environment, alien to their ancestral homes in the South American mainland. The principal new forces they encountered were hurricanes and volcanoes, which confronted them from time to time with spectacles of awesome, destructive power... To these forces of nature their shamans successfully engineered new cosmogony and cosmologies, in which sea and volcano featured prominently. (2003)

Fergus goes on to suggest that the Amerindian petroglyphs of Petit Bordel might have been sites of rituals designed to 'appease the gods who dwell in the bowels of the volcano,' and then writes about Yocahu, the Arawacan God of the volcano, suggesting that:

to locate the home of their creator god in the hellhole of a crater is a most powerful cosmological problematic [*sic*]. It definitely speaks to the overarching importance of the volcano in the lives of these culture groups, and of native peoples in the Lesser Antilles on a whole. (Fergus 2003)

But how could people who, according to our storyteller, were able to 'stroll' up to the top of the volcano shortly after its eruption and look deep into its depths and see nothing there, not even a drop of water, cling to a belief in such a god of the volcano if the facts of the world as they saw it rigidly determined the conceptual structures of their beliefs? Well, of course: Yocahu and his entourage had presciently sailed away in their little boats with white sails long before the deadly eruption of La Soufriere.

¹ Morne Ronde is an area located on the leeward side of the island, less than four kilometers from the crater of La Soufriere.

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SCANDALS IN TRANSLATION QUALITY ASSESSMENT

HARRY J. HUANG
Macquarie University, Sydney, Australia

THIS ESSAY HIGHLIGHTS some chronic problems in translation studies and, in particular, translation quality assessment (TQA). The author discusses the well-known disbelief in translation theory's ability to effectively guide translating and translation examination markers. Specifically the essay discusses some unprofessional behaviour among translation theorists and illustrates wide differences in criteria set for an acceptable translation and mark deductions for grammatical errors in an international survey of published translators, writers, editors and translation professors. The author concludes by proposing a compromise, or collective approach to TQA.

1. THE CRISIS.

1.1. CRISIS IN TRANSLATION THEORY. It is a well-known fact that translation theories have little credit among translators. Most translation theories are irrelevant to translating practice and therefore largely ignored by translators. “‘Translation theory? Spare us...” That’s the reaction to be expected from most practicing translators’ (Chesterman & Wagner 2002:1). Wang’s quotation echoes the preceding statement: ‘I am a translator. I know nothing about theory... If you are that great, show me something [a work of translation]’ (2002:61, translation mine). As unfriendly as the translators’ remarks may be, they are not isolated. Disbelief in translation theory also exists among translation scholars.

From Cicero (106–43 B.C.) to 1900 in the West and from Confucius (551–476 B.C.) to 1949 in China, it is safe to say that any opinion, be it a comment on a translating problem or an explanation of self-defence, may be crowned translation ‘theory’. In the 20th and 21st centuries, again ideas and opinions presented within a theoretical frame in the form of essays or books may be labelled as ‘theories’. The generous labelling has resulted in nearly as many theories as have been proposed. The result is that mediocre translational studies run rampant, creating a phenomenon called the ‘translatologese syndrome’ (Huang 2006:75). For more than 2000 years, translation theory has by and large transmitted information rather than knowledge, offered personal observation and/or imagination instead of universal laws, and often attempted to solve all problems of all languages without testable truth. Mediocre translation theorists show poor understanding of the subject discussed, legitimize faulty arguments based upon fallacies, self-worship their new ‘theories’ that essentially paraphrase others’, even harass critics/peers with unnecessary information or technology that is new to them, or exact silence from critics by citing examples in another language unknown to them. It is unnecessary to name specific mediocre translationalists carrying the translatologese syndrome. The reader is invited to randomly select a sample of translation studies from the bookshelves of any large university library to determine if

the so-called theory offers any universal truth or applicability. The opinion that translation theory is neither a theory nor a science indicates that the translologese syndrome exists among most translologists (Huang 2006:75-76).

1.2. 'TRANSLATION THEORY IS NEITHER A THEORY NOR A SCIENCE.' In the author's point of view, a theory is unacceptable if it does not turn information—copied or cited—into knowledge (distinctly original) and if it cannot be tested. This must not be misunderstood as denial of the many years of study of the hardworking translation scholars who have described the translating process and many other important issues, but merely highlights the lack of testable theory throughout the past two millennia. Hatim and Mason, among others, notice that '[translation] theory and practice do not seem to match' (1990:30), while Wilss has bluntly pointed out that the large number of translation theories 'have amounted to a mass of uncoordinated statements' (1982:11). Nida honestly admits that

...there is no one generally accepted theory of translation in the technical sense of 'a coherent set of general propositions used as principles to explain a class of phenomena', but there are several theories in the broad sense of 'a set of principles that are helpful in understanding the nature of translating or in establishing criteria for evaluating a particular translated text'. In general, however, these principles are stated in terms of how to produce an acceptable translation. (2001:240)

In the final analysis, most of the numerous 'theories' are only carefully written opinions or fallacies. Newmark's definition is an accurate reflection of the quality of translation theory: 'Translation theory is neither a theory nor a science, but the body of knowledge that we have and still have to have about the process of translating' (1981:14). Little wonder Zhong discovers that 'it is hard to find a systematic translation theory to guide translation practice' (2003:21), while Luo admits that 'we [scholars in China] are still unable to evaluate translations in a very scientific way' (1999:5). This has happened despite the publication of hundreds of books and essays on translation studies. The English cumulative index of the periodical *Bibliography of Translation Studies* from 1992 through 2002, for example, shows 560 English titles while Wang claims that China 'has produced theoretical books on translation in the hundreds, no less than the total of any other country' (2002:56). Online and print journals such as *Meta*, *Target*, and *Babel*, publish hundreds of essays on translation studies annually. In short, essays and books of translation theory have been published in so many languages that no individual can ever read them all or provide an accurate estimate of their quantity. Nevertheless, despite 'the calibre of those who have written about the art and theory of translation, the number of original, significant ideas in the subject remains very meagre' (Steiner 1975:251). Some thirty years later, despite a larger army of translation scholars and new research methodology, breakthroughs in theoretical research are as rare as ever. Nida summarizes:

...for the most part the best professional translators and interpreters have little or no use for the various theories of translation. They regard them as largely a waste of

time, especially since most professional translators regularly and consistently violate so many rules laid down by theorists. (2001:127)

1.3. WHAT TRANSLATION THEORY IS AND WHAT IT OUGHT TO BE. The age-old issue of irrelevant translation theory is a three-fold problem. Firstly, as is popularly known, there is not even a universally accepted definition of what a translator is or what translation is. Secondly, there is no standardized translation quality assessment (STQA), which means no consistency in TQA. Thirdly, instead of improving the testability of new theories, translation scholars have been digging academic holes—deeper and wider with each passing year—for themselves. Fallacies have been and are being developed based upon fallacies that originated from fallacious opinions. It is as true today as it was in the 1970s when Steiner pointed out that, despite some two thousand years of argument and precept:

...the beliefs and disagreements voiced about the nature of translation have been almost the same. Identical theses, familiar moves and refutations in debate recur, nearly without exception, from Cicero and Quintilian to the present-day. (1975:250–51)

The difference is that authors of theories today seek aid from technology, but most arguments, assumptions, and opinions remain unchanged.

The *Oxford English Dictionary* (2000) defines *theory* as a conception or mental scheme of something to be done, or of the method of doing it; a systematic statement of rules or principles to be followed. It also defines it as a scheme or system of ideas or statements held as an explanation or account of a group of facts or phenomena; a hypothesis that has been confirmed or established by observation or experiment, and is propounded or accepted as accounting for the known facts; a statement of what are held to be the general laws, principles, or causes of something known or observed. A translation theory ought to be a systematic and coherent set of rules or laws that can guide or apply in practice universally, or at least withstand universal testing. In the remainder of the essay, the author discusses some of the most important causes of the translation theory crisis, including translation scholars' misunderstanding of the nature of translation, use of outdated theories as the basis of new ones and secret TQA without consistency and without a model to follow. Unacceptable differences in international translation inaccuracy rates and mark deductions for grammatical mistakes are also presented to illustrate the unacceptably different criteria in use.

2. INCOMPETENCE—A CAUSE OF CRISIS.

2.1. INCOMPETENCE LEADS TO MISUNDERSTANDING OF THE NATURE OF TRANSLATION. Many authors of translation studies, ancients and contemporaries alike, are incompetent translators themselves. They thus find translation very difficult or even doubt the translatability of a text, often exaggerating the difficulty of translating. 'Translation, as Allen Tate said of criticism, is forever impossible and forever necessary' (Seidensticker 1989:153). Such doubt is groundless. Translation is impossible and difficult only for the incompetent. Except for very rare cases, translation is not only possible, but also an achievable job that

has been successfully performed by numerous individuals as well as institutions including the United Nations and bilingual countries such as Canada. There is nothing absolute in any science and profession, and translating is no exception. Faithfulness and accuracy in translation are relative, namely, achievable only to a degree.

The UN *Universal Declaration of Human Rights* that has been translated into 331 languages (United Nations 2007) demonstrates translatability. Confucius' *Lun Yu*, written in ancient Chinese, has been translated into 23 languages by Confucius Publishing. The English translation of the *Bible* from Greek and Hebrew and the English translation of the *Koran* from Arabic, just to mention a few others, are all examples of translatability. None of these translations was easy, but not because they were untranslatable, but because few individual translators were competent enough to handle the task comfortably.

Untranslatable content, such as cultural concepts and rhyming poems, for example, comprises no more than 1% of today's translating business. Doubting translatability in general by citing rare instances is misleading; basing one's argument on one's own incompetence is unprofessional and unscholarly.

Translation means imperfectness. That is a generic feature of translating, where the goal is not to achieve the unachievable perfection, but to minimize the imperfectness—the loss, addition or alteration of meaning and other inaccuracy in the translated text (TT). Francis William Newman (1805–1897) suggested assessment of the imperfectness of a translation: 'Translation being matter of compromise, and being certain to fall below the original, when this is of the highest type of grandeur, the question is not What translator is perfect? but Who is least imperfect?' (1861:257). When one abandons the unrealistic expectation of perfection, better research may be conducted to narrow down the inaccuracy rate and imperfectness, eventually leading to better quality of translating.

2.2. CITATIONS FROM OUTDATED THEORIES. In translation studies, there seem to be more academic copycats than researchers. Research students or young scholars, for instance, often cite what they have read indiscriminately. For example, a famous scholar may have in their early career published flawed papers which may even contradict their later publications, but some researchers indulge themselves in attacking such old theories and models. Others base their studies on such theoretical frames, unaware of the obsolescence of the theory. Nida, among others, changed his views on various issues of translation. As observed by Zhang Jinghao (Nida 2001:284), Nida's opinions changed in the mid-1970s. In his published letter to Zhang, Nida admits, 'My ideas have changed substantially, especially as the result of seeing what is happening in so many schools of translating here in Europe. I myself was too optimistic about the possibility of applying linguistics, sociolinguistics, and semiotics to the issues of translation' (2001:285). While such changes may have taken place in a translation scholar's views and theories, other ignorant translation research students and scholars keep citing the outdated theories. It is not difficult for one to prove some of these old opinions flawed or wrong.

A random selection of thirty books from a translation studies bookshelf in the University of Toronto library and the author's study shows the information presented in **Table 1**. **Table 1** is given to illustrate how well-respected Nida is. It is not suggested that all the citations from

Author	Year	Year of Nida's publication cited
Gentzler	1993	Nida, 1953, 1960, 1964, 1969, Nida & Taber, 1969
Heltai	2004	Nida, 1964, 1969
Dimitrova	2005	Nida, 1964
Wang	2002	Nida, 1964
Liu	2003	Nida, 1964, Nida & Taber, 1969
Lederer	2003	Nida, 1974
Larson	1998	Nida, 1947, 1951, 1954, 1955, 1961, 1964, 1970

Table 1. Citations from Nida's works published before the mid-1970s.

his publications before the mid-1970s are inappropriate, or that older works must not be cited. Rather, theoretical support from such publications deserves one's close attention, and to dispute Nida's outdated opinions or to build one's theory upon one of his invalid theories is to risk creating fallacies based on 'fallacies.' Translation theorists can do whatever they like, but the public has the right to judge what they read and decide what to believe and what to disbelieve. That brings us back to the crisis of belief in translation theory.

3. SCANDALS IN TQA

3.1. SECRET TQA. A notorious scandal in the field of translation is the secrecy of TQA. At present, it is a universal rule that the marking of translation examinations, for example, is kept in the dark under the pretext of protecting the privacy of the examinee. This author has attempted to acquire photocopies of marked examination papers with the examinees' and markers' names removed for the purpose of testing a standardized TQA model, but America, Australia, Canada, China and the United Nations, to name a few, all have a policy, written or unwritten, that prohibits the release of any marked examinations, old or new, to the public. Besides guarding the so-called privacy of the examinees, markers are probably concerned that their marking is not standardized and therefore may not be able to justify why a mark is deducted or awarded. Logically, it is easier to hide the marks.

Since Cicero, much debate on translating quality has taken place, but the new millennium has witnessed neither a breakthrough in TQA, nor agreement on the criteria of a good or successful translation. As Williams points out, 'Whereas there is general agreement on the requirement for a translation to be "good", "satisfactory", or "acceptable", the definition of acceptability and of the means of determining it are matters of ongoing debate and there is precious little agreement on specifics' (2004: xiv). One primary cause is the qualitative approach to TQA, which technically leaves open all aspects of evaluation and assessment for the assessor. In a well-educated community of translation scholars where everybody seems to have his or her own theory, TQA qualitative approaches, not surprisingly, differ widely from one another. That is why there is the case where deductions may range from zero to ten marks out of ten for the deletion of the word *nothing* as discussed below. In other

words, translation examiners may not have consistent mark deduction criteria and can hardly explain why a grade is given except that it is an impression grade and that the marker has the authority to pass or fail an examinee. Imposing administrative rules—keeping the examination papers confidential—is an irresistible option for the present.

3.2. NO TQA MODEL TO FOLLOW. Thirty years of study on TQA, including the publication of many approaches and models utilizing theories of various disciplines have contributed very little to the frontline translation examination markers. As surveyed, only one translator in the group of sixty participants who completed the author's complete survey indicates that he/she has found a satisfactory TQA model, which is his/her father's. One should not be surprised if consistency remains an issue when markers assess translation without a TQA model.

3.3. INCONSISTENCY IN TQA. The difference in inaccuracy tolerance rates among markers who may have the authority to accept or reject a translation is unacceptable. Examine the deductions for the same error in the following case.

In the author's international survey was a sentence with an artificial mistake—the deletion of the word *nothing* from the original translation, designed to reveal the marking criteria for the preparation of the international mean. The sentence is as follows:

Original: *Being poor is nothing to be ashamed of.*

With an artificial mistake: *Being poor is to be ashamed of.*

Of the sixty markers, two deducted nothing for the error; nine deducted one mark; while eight deducted ten marks out of ten. There is no majority among the mark deductions, as seen in **Table 2**.

Logically, it is hard to accept that a sentence missing a word which results in the opposite meaning of what it was intended to say is exempted from mark deduction. One guess is that the two markers might have mistaken the 0 for the mark earned by the writer of the sentence. The second guess is that they might have misunderstood the instructions and given it a full mark for its grammatical correctness despite the opposite meaning. Such mistakes may occur due to various reasons, such as carelessness and fatigue. The next group of nine deducted one mark for the error, which is also very lenient compared with the deduction of ten marks. The eight people who deducted ten out of ten may have interpreted that despite its grammatical correctness, the sentence not only fails to convey its original meaning, but also misleads the reader. To them, a misleading sentence may be as bad as, or perhaps even worse than, a meaningless sentence. The same inconsistency occurred at the 33rd international conference of the Linguistic Association of Canada and the United States at the University of Toronto in Canada whose delegates verbally deducted (upon the presenter's request) marks similar to those reported above. The two extremes are the eight delegates who deducted ten marks out of ten, while six deducted one out of ten (the result of the verbal assessment has been excluded from the calculation below which was based solely upon written data). Every participant was considered a qualified translation evaluator. No

Deduction out of 10	Markers	%	Cumulative %
0	2	3.3%	3.3
1	9	15.0%	18.3
2.0	7	11.7%	30.0
3.0	3	5.0%	35.0
4.0	3	5.0%	40.0
5.0	13	21.7%	61.7
6.0	4	6.7%	68.3
7.0	5	8.3%	76.7
8.0	5	8.3%	85.0
9.0	1	1.7%	86.7
10.0	8	13.3%	100.0
Total	60	100.0	

Table 2. Marker response to the exclusion of nothing in a translated sentence.

	N	Mean	Std. Deviation	Std. Error Mean
Q1A	60	4.950	3.0722	.3966

Table 3. Mean deduction of nothing.

marking instructions or criteria were provided, and no explanation was requested from the participants.

Throughout the world, evaluators usually evaluate translations individually or in small groups without international criteria, and as traditionally practiced, grammatical mistakes are treated according to gravity, a phenomenon pointed out in Lois Stanford’s presidential address at the 33rd LACUS Forum (in this volume) and other publications (e.g. Williams 2004:3–9). Inconsistency is inevitable, given that every evaluator assesses the severity of a mistake based on his or her own judgment. That explains why deductions for the same mistake may range from one mark to ten. For the world’s criteria developed from the international means, see Huang (forthcoming a).

Regardless of the reason, wide differences in TQA are unfair for the examinees in the case of a translator certification examination, for example. Such marking criteria would make the results of translation examinations questionable. **Table 3** indicates that the mean deduction of the sixty international participants, however, is close to 5.

The mean may not please those who deducted 10, 9, 8, 7 or 6 marks or those who deducted 0, 1, 2, 3 or 4 marks, but it is a compromise. A compromise imposed on the markers is fairer for the examinees than having no compromise. It also seems agreeable with the general principle of democracy.

		Frequency	%	Cumulative %
Valid	.0	1	1.0	1.0
	.1	4	4.0	5.0
	.5	8	8.0	13.0
	1.0	10	10.0	23.0
	1.5	1	1.0	24.0
	2.0	7	7.0	31.0
	3.0	1	1.0	32.0
	4.0	3	3.0	35.0
	5.0	33	33.0	68.0
	6.0	7	7.0	75.0
	7.0	1	1.0	76.0
	8.0	3	3.0	79.0
	10.0	21	21.0	100.0
	Total	100	100.0	

Table 4. Maximum tolerable inaccuracy rates including untranslatable words and undeniable mistakes.

	N	Mean	Std. Deviation	Std. Error Mean
Question 9	100	4.929	3.3148	.3315

Table 5. Mean maximum inaccuracy rate.

3.4. MAXIMUM TOLERABLE INACCURACY RATE. Again, there is a huge discrepancy among the respondents with regard to the maximum tolerance of inaccuracy: as shown by **Table 4**, of the 100 respondents 23 indicate that 1% or less is acceptable, 33 can accept up to 5%, while 21 can endure up to 10%.

The difference between 1% and 10%, again, seems unacceptable to the examinee or the public. **Table 5** shows that the average of the markers is close to 5%. In other words, a translation with a minimum accuracy rate of 95.1% is acceptable, but anything lower than that will be rejected as failure. If the mean is acceptable, a new criterion has been created. It may not please many of the markers, but it is a workable solution. See Huang (forthcoming b) for further discussion on the topic.

3.5. MAXIMUM PERCENTAGE OF SYNTAX MISTAKES AND/OR UNDENIABLE FLAWS. When asked about the maximum percentage of syntax errors and/or other undeniable flaws, the respondents, as in other cases, provided a variety of answers, ranging from 0% to 10%.

As indicated in **Table 6**, sixteen people would accept no mistakes, and nine could tolerate up to 10%. In other words, if the first group (16) finds a single syntax error in a translation of 100 sentences or shorter, it would simply reject the work, whereas the last group (9) would reject the translation only if it finds the eleventh mistake. See the mean in **Table 7**.

Percentage	Frequency	%	Cumulative %
.00	16	16.0	16.0
.10	2	2.0	18.0
.50	2	2.0	20.0
1.00	25	25.0	45.0
2.00	13	13.0	58.0
3.00	6	6.0	64.0
4.00	1	1.0	65.0
5.00	25	25.0	90.0
8.00	1	1.0	91.0
10.00	9	9.0	100.0
Total	100	100.0	

Table 6. Maximum percentage of syntax mistakes and/or undeniable flaws.

N	Mean	Std. Deviation	Std. Error Mean
100	2.9720	2.93575	2.9357

Table 7. Mean maximum percentage of syntax mistakes and/or undeniable flaws.

As **Table 7** shows, instead of allowing zero mistakes or ten mistakes, the average marker allows 2.97, which may be a reasonable compromise for all parties.

In brief, as demonstrated above, qualitative TQA has resulted in not only inconsistency, but also unfairness for examinees.

4. CONCLUSION: PERSPECTIVE OF STANDARDIZED TQA. From the definitions of *translator* and *translation* to *translation quality assessment* to practically every subject of discussion, there is no agreement among translation theorists or practitioners. One must not be surprised if translation theory that cannot withstand true testing and that is irrelevant to human or machine translation fails to guide TQA.

The millennia-old slogan repeated in various writings and languages is restated by Fu: ‘an ideal piece of translation should be like a Chinese version written by the author of the source text’ (1951:103). As August Wilhelm von Schlegel (1767–1845) stated, ‘It goes without saying that in the end the finest translation is at best an approximation to an indeterminable degree’ (1802:220). Qualitative TQA is subjective and has created unfairness for translation examinees including students, translator trainees, and the society as well. Perfect reliability or validity in any form of measurement is unattainable. Like other models for numerical measurement, there may be random errors or inaccuracy (cf. McClendon 2004:7). At present, a possible solution to TQA is a fuzzy, numerical compromise approach—the acceptance of the mean (Huang forthcoming a). A compromise is an approximation. It is the necessary first step toward abolishing inconsistent standards in TQA.

To conclude, a model for fuzzy standardized TQA (the author's completed dissertation) is overdue: it not only will improve the consistency and expectedly the quality of TQA, but will save human resources and contribute to the improvement of the reputation of translation theory. Only through standardized assessment can the transparency of TQA be improved and can marked translation examination papers be scrutinized by the public. A fuzzy standardized approach is not the end of STQA, but just the beginning of the beginning.

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DISCOURSE EVENT-REPRESENTATION WITH AN UNTENSED BI-CLAUSAL CONSTRUCTION

KUNIYOSHI ISHIKAWA
Meiji University and Yale University

I PRESENT PART OF A SYSTEM of discourse updating. I resolve problems concerning the interpretation of structural underspecification in the light of temporal organization. I examine such an underspecified bi-clausal construction in Japanese, the so-called Head-Internal Relatives (hereafter HIR), as in (1) and (2).

- (1) [[Suri-ga Mary-no saihu-kara kane-o
[[Pickpocket-NOM Mary-GEN wallet-from money-ACC
{nukitor-u/nukitor-ta}-no]-o John-ga tukamaeta.
pull-out-Imprf/pull-out-Prf]-Nominal]-ACC John-NOM caught
'A pickpocket pulled Mary's money out of her wallet and John caught him.'
- (2) [[Yumi-ga keeki-o {*yak-u/yai-ta}-no]-o
[[*(f. name)*-NOM cake-ACC {*bake-Imprf/bake-Prf}-N]-ACC
Taro-ga totta.
(m. name)-NOM took
'Yumi baked a cake, which Taro took.'

I discuss in Ishikawa (1998, 2003a, 2003b) whether the subordinate HIR is truly a relative clause. In fact, the nominal *-no* which appears as the head of the assumed relative clause is not referential. Morphologically, no conjunctive element is observable in the bi-clausal construction; the nominal head *-no* is simply marked with an accusative *-o* case and serves as an object of the main predicate. In addition, on the surface in Japanese, no relative marker exists that is equivalent to that in English. Although it is termed a relative clause, the name HIR is a misnomer in the sense that no empty element is observed as a gap within the clause, as often claimed in formal syntactic descriptions of the abstract structure of relative clause constructions. Based on these facts, I analyze the HIR as an adnominal clausal complement (Ishikawa 2003b). The same line of discussion is observed in Kuroda (1992), Matsuda (1993), and Matsumoto (1997), among others. I claim that the HIR construction is therefore a full-fledged clausal complement, except that it is untensed. In the following sections, I examine one of the unique characteristics of the HIR, i.e. its untensed nature, and then propose approaches to the temporal interpretation in discourse to account for the overall interpretation of the underspecified bi-clausal construction.

1. UNDERSPECIFICATION OF TEMPORAL ORDERING IN THE HIR. Bi-clausal constructions are generally not involved in sequences of tenses between the two clauses in Japanese. Therefore, predicates, whether main or subordinate, are expected to indicate tense independently. However, as Soga (1983) points out, temporal markers *-u* and *-ta* indicate oppositions in either of two ways; that is, tense oppositions such as non-past vs. past, on the one hand, and aspect oppositions such as imperfective vs. perfective, on the other. Even so, the HIR construction in (1) and (2) appears to conflict with these oppositions. That is, in (1), the subordinate HIR clause can have either *-u* or *-ta* and yet, either way, the same sequence of two past events is interpreted. This is accounted for if the temporal markers in the subordinate HIR represent the imperfective/perfective opposition, not the non-past/past distinction. In this respect, the HIR is not tensed. However, in (2), the subordinate HIR accepts only the marker *-ta*, and the whole construction represents a sequence of two past events. Either (1) or (2) would be analyzed as exceptional, in light of tense, at any rate. In addition, according to the classification of verbs into such classes as process, accomplishment, achievement, or state, 'pulling money out' in (1) and 'baking cake' in (2) are both in the same class: accomplishment. Therefore, an eventuality-based approach would not suffice for the purpose of accounting for the contrastive difference of the acceptability observed between (1) and (2). I analyze this apparently complex problem, and provide an integrated account for it.

In particular, past approaches that are based on either syntactic or purely semantic approaches cannot resolve the following problems: first, tense is not specified in the subordinate HIR clause; second, as in (1) and (2), no presupposition trigger is available to identify a referent for the non-referential head nominal *-no*. The HIR in Japanese occurs exclusively in a colloquial discourse. The system I propose aims at a model of discourse updating for event representations in conversational sequences, and I accommodate in my discussion the basic insights of discourse representation theories, as in Kamp (1981), Heim (1983), Lascarides and Asher (1993), Asher (1993, 1999), Avrutin (1999), and Asher and Lascarides (2001), among others. I assume that utterance sequences are connected in terms of principles such as maximal discourse coherence. In this respect, I draw especially on Asher's Segmented Discourse Representation Theory (SDRT). Due to space limitations, I leave the details of discourse representation theories to readers. Instead I concentrate on the temporal interpretation of a sequence of events. Concerning the indefinite nature of the nominal *-no* that serves as a bridge between the two adjacent clauses of the HIR construction, I assume the pragmatic conditioning of a definite or indefinite nominal in the context of the information status of a discourse entity to which a nominal refers. This line of approach is discussed and developed in Gundel, Hedberg and Zacharski (1993), Prince (1981a, 1981b, 1992), Abbott (1993, 2003), Birner (1994), Hawkins (1991), McNally (1998), Vallduvi (1992), Vallduvi and Engdahl (1995), Ward (1995), Birner and Ward (1998), and is consistent with Kuno's (1972, 1973) functional perspective. In the following, I refer to the representation of what is described by a predicate and subject as *event* to avoid any confusion with terms such as act or situation.

2. PROBLEMS WITH ASPECTUAL ACCOUNTS OF TEMPORAL INTERPRETATION. As I point out above, aspect-based accounts cannot explain how the same aspectual class of predicates results in different acceptability within one construction, as observed in (1) and (2). Likewise, Dowty's (1979, 1982, 1986) aspect-based work on temporal relations between successive events presents a theory of what he terms the 'temporal discourse interpretation principle' (TDIP), as in (3) (from Dowty 1986:45, ex. (16)):

- (3) Given a sequence of sentences $S_1, S_2 \dots S_n$ to be interpreted as a narrative discourse, the reference time of each sentence (for i such that $1 < i \leq n$) is interpreted to be:
- a. a time consistent with definite time adverbials in S_i , if there are any;
 - b. otherwise, a time which immediately follows the reference time of the previous sentence S_{i-1} .

Dowty (1986) develops his discussion of particular aspect classes associated with overlap/non-overlap relations between two events. His TDIP requires (4).

- (4) If two accomplishment/achievement sentences occur successively in a discourse, they are not only asserted to be true at successive but non-overlapping intervals, and there cannot even be overlapping intervals at which they are true... (Dowty 1986:48)

This assertion of no overlap between two successive events with accomplishment predicates appears to work with English examples such as (5).

- (5) John entered the president's office. The president walked over to him. (*ibid*:47, ex. (18))

As the TDIP predicts, the time of the president's walking over to John by default comes immediately after the time of John's entering event in the first sentence. However, overlap is not completely implausible. As I discuss below, such a generalization of non-overlap is hard to maintain and the relations between two events seem to be more complex in examples of the HIR construction than in those in Dowty (1986). Dowty himself had to recognize examples like (6) with accomplishments/achievements, which do not obey his TDIP, although he states that exceptions are just a few.

- (6) John knelt at the edge of the stream and washed his face and hands. He washed slowly, feeling the welcome sensation of the icy water on his parched skin. (*ibid*:58, ex. (42))

In (6), the events include the same act in both sentences, that is, John's washing. So the reference time is also understood to be the same in the two sentences. However, Dowty's generalization fails to account for the sequence of two sentences; the two in (6) would have to be interpreted wrongly as non-overlap by such aspect-based approaches, since both contain accomplishments. In reality, the sentences seem to describe the overlap or inseparable

events, as the repetition of the identical *washed* indicates. While such a semantic aspect approach misses this point, a syntactic approach would have to analyze the two simply as anaphoric, with the subjects *John* and *he* coreferential. This approach does not recognize the overlap and also misses the point at issue. At the discourse level of the approach I introduce, in contrast, the two are understood as being of particular event relations. In the literature of discourse rhetorical relations (e.g. Asher 1993, 1999), this sort of event relation is termed Elaboration as an inseparable unit of events.¹ Thus, the overlap in (6) is accounted for in terms of speaker's strategy with discourse event relations. The example in (6) seems to be beyond the scope of the generalization laid out in (3) and (4). In section 3, in terms of discourse event relations I examine more complex cases which involve the indeterminacy and overlap concerning temporal relations.

3. REASONING PROCESSES OF TEMPORAL INTERPRETATION IN DISCOURSE. Now I return to Japanese HIR examples and illustrate how the underspecification of temporal relations can be accounted for. It turns out that what is crucial here is not an aspectual class like accomplishment/achievement but the overall compatibility measurement between two successive events described by two clausal units.² Consider (2), repeated here for convenience as (7).

- (7) [[Yumi-ga keeki-o {*yak-u/ yai-ta}-no]-o
 [[(f. name)-NOM cake-ACC {*bake-Imprf/bake-Prf}-N]-ACC
 Taro-ga totta.
 (m. name)-NOM took
 'Yumi baked a cake, which Taro took.'

According to Parsons (1990), it is expected that the clause in the HIR with an accomplishment predicate would be interpreted as either an In-Progress or Resultant state, grounded in the duration and culmination of an event like baking a cake. However, tense is not explicit in the subordinate HIR clause. For the interpretation of the HIR, therefore, some reasoning must be involved. The temporal organization of the whole construction depends directly on the compatibility between the two successive events.

Now a relevant process is what I term *Default Matching*. This is the default reasoning of matching one event with the other for temporal ordering in underspecified utterances. In the discourse process of temporal interpretation, the time intervals that obtain between two successive events are examined in graphic fashion in **Figure 1**, as in discourse representation theories.

In the graphic representation in **Figure 1** for the time intervals of (7), I observe that a terminal point-in-time is available to the first event with baking of cake, since the right boundary of the time interval can be closed or open, due to the duration and termination indicated by the event. Thus it is crucial to see if that end-point is compatible with the inceptive point of the second event depicting Taro's taking it. Now, the taking by default occurs only after the baking of cake is completed. That is, a Resultant state obtains with the first event. This is

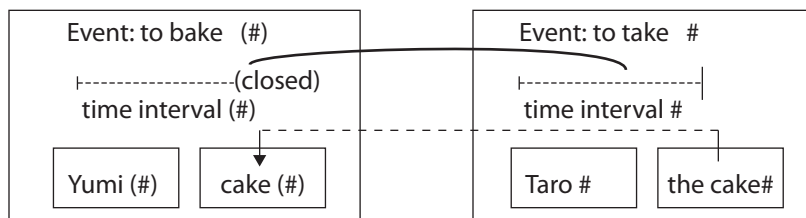


Figure 1. Graphical representation of example (7).

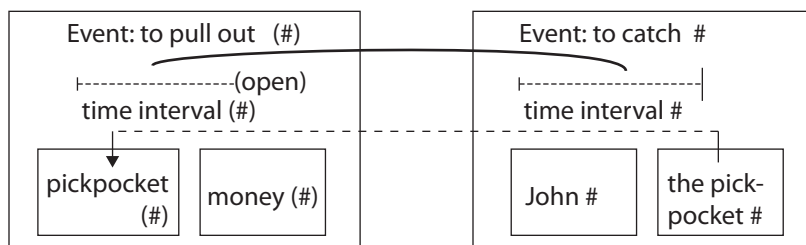


Figure 2. Graphical representation of example (8)

the only default matching for a plausible interpretation between the two events in (7). In this incremental interpretation at the level of discourse processes, the coordination comes out clearly. There will be additional detailed steps involved in the overall interpretation such as reasoning of distinct default information derived both from lexicon and discourse context. Discussion of such distinct defaults is developed in Ishikawa (2003b).

Contrary to (7), either the overlap or non-overlap between two events may be acceptable, depending on the right and left boundaries of the two time intervals. This is illustrated in (1), repeated here as (8) with a diagram (Figure 2).

- (8) [[Suri-ga Mary-no saihu-kara kane-o
 [[Pickpocket-NOM Mary-GEN wallet-from money-ACC
 {nukitor-u/nukitor-ta}-no]-o John-ga tukamaeta.
 pull-out-Imprf/pull-out-Prf]-Nominal]-ACC John-NOM caught

‘A pickpocket pulled Mary’s money out of her wallet and John caught him.’

In (8) I observe that either an In-Progress or Resultant state is available for the first event. Then, under this indeterminacy, a default reasoning of matching is involved for temporal ordering between the two events. In Figure 2 for time intervals of (8), a terminal point-in-time is available for *pulling out money* of the first event, but the right boundary of the interval can be either open or closed. In addition, the right boundary for the first event is still compatible with the inceptive point-in-time of the second event, even if the boundary is closed. That is, the catching should **by default** occur either with an In-Progress or Resultant state of pulling money out, unless any further discourse event is given. Mary’s money still exists after

the pulling out is complete. This is the default matching for a plausible interpretation of two events in (8). Thus, either a perfective *-ta* or imperfective *-u* is acceptable in the HIR predicate in (8). A further point is that, whatever the definition of a pickpocket, a man can be caught as soon as he begins pulling something out of another's possessions. This obtains in discourse processing with only the combination of lexical and discourse default information. Note that, in aspect-semantic approaches, as in (3)b and (4), the two events indicated in (8) would be analyzed only as not overlapping with each other, since both predicates are accomplishments. The case shown in (8) especially exemplifies a problem with the aspect-semantics for each sentential unit, i.e. the problem of indeterminacy in overlap/non-overlap with two-event relations of this sort, in addition to the case of inseparable events in (6). In temporally under-specified constructions such as the HIR, this sort of reasoning process, as illustrated here in terms of default matching, is inevitably involved. And they are part of information updating in the interpretation of sequences of events.

There is an interesting contrast between (9) and (10). Now (9) has HIR examples and (10) has what has been called a relative clause construction in Japanese.

- (9) a. [[Mary-ga ringo-o tabete iru]-no]-o John-ga totta.
 Mary-NOM apple-ACC eat-Imprf]-N]-ACC John-NOM took
 'Mary was eating an apple, which John took.'
- b. # [[Mary-ga ringo-o tabeta]-no]-o John-ga totta.
 [[Mary-NOM apple-ACC eat-Prf]-N]-ACC John-NOM took
 Lit. 'Mary ate an apple, which John took.'
- (10) A complex NP with a pre-modifying clause (termed Relative Clause)
 [[Mary-ga tabeta] ringo]-o John-ga totta.
 [[Mary-NOM eat-Pst] apple]-ACC John-NOM took
 READING A: 'Mary ate an apple, which John took [i.e. the core].'
 READING B: 'Mary ate an apple. John took it earlier.'

The unacceptability of the HIR in (9)b might look obvious, but the corresponding construction of what is termed Relative Clause Construction, as in (10), yields marked differences in the acceptability of the identical event relations. In (9)b with the perfective marker *-ta* in the HIR predicate, the first event is already culminated. After an apple is completely eaten by Mary, there should be nothing left for John to take. This leads to a contradictory reading. In (9)a, either state is possible with the first event, but an In-Progress state reading is prioritized through default matching when the second event is connected. Thus, part of the aspectual meaning of a predicate with an imperfective *-te iru* is affected by the compatibility between two events. In (10) with so-called relatives, however, two readings of contrastive event relations are available. In reading B, Mary's eating is interpreted as following John's taking an apple. This sort of reading in (10) is accountable if the temporal particle *-ta* indicates past and no perfective meaning is assumed. Both clauses indicate past, and the event relations can be in either order: Mary's eating may come first or it may come after John has taken an apple. The examples seem to demonstrate marked differences in temporal organization between the HIR and what is termed Relative Clause in Japanese.

The contrast between **Figure 1** and **Figure 2** with the temporally underspecified HIR indicates the involvement of particular interpretation processes in discourse, since the only difference between the two examples is the event compatibility measurement between the time-interval organizations. That is, a key issue is whether the first event is compatible with the second event when the first event indicates either of two states, an In-Progress or Resultant state, by perfective/imperfective oppositions. This seems to have no counterpart structurally in identifying the acceptability of those utterances.

4. CONCLUDING REMARKS. I argue that a temporal interpretation of untensed HIR involves the reasoning process of Default Matching in discourse, through which the ordering compatibility between two serial events is determined. The default matching process works with discourse information updating between events through left/right boundaries of time-intervals. Two-event relations in the representation of Default Matching turn out to be essential for discourse coherence with sequences of events. Without the linking of such matching processes, there would be no obvious connection between the two events, resulting in interpretation fallacy.

Contrary to Dowty's (1986) generalization, overlapping happens in the temporal representation between events that depict accomplishment, as shown in the HIR examples. In essence, the HIR construction requires contiguity between two events. A due theoretical implication is that the discourse updating in discourse representation theories will be well-motivated, given the need to specify overlap versus non-overlap between successive events.

¹ As Shin Ja Hwang (p.c.) points out, Elaboration seems to be the kind of rhetorical relation under which the two utterances in (6) fall. Mann and Thompson (1988) and Asher (1993) develop representations of these rhetorical relations. The relation of Elaboration accounts for inseparable events in a sequence of utterances. In this respect, the apparent two events cannot indicate non-overlapping intervals, as claimed in (4). Birner and Ward (1998) also use a similar relational notion, *poset relations*, in analyzing two events in which one description is a detailed part of the whole event.

² An anonymous reviewer emphasizes the totality of situational context as imperative to a discourse-related study. Agreeing with his comment, I discuss the overall consideration of an utterance unit, not merely an aspectual taxonomy with one single predicate or just a phrasal composition with anaphora. The utterance unit is then analyzed as part of a discourse sequence. However, the sequence of two events that I am concerned with is essential as a starting point, and the observation based on the event-based temporal matching here will be accessible to the domains of sequencing utterances which research into computational linguistics has been dealing with (e.g. Centering Theory). The question of seeking the totality of the real world/situation might be answered in light of how language cuts the continuum of real world phenomena into segments of discourse units. Departing from a sentence grammar perspective, I contend that even the analysis of an apparent structural construction can be aided by a discourse pragmatic approach that I introduce in part here.

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FEELINGS IN SIDAAMA

KAZUHIRO KAWACHI
University at Buffalo, SUNY

THIS STUDY SHOWS that Sidaama, a Cushitic language of Ethiopia, does not have any lexical exponent for *FEEL*—one of the concepts that Wierzbicka's Natural Semantic Metalanguage (NSM) research program proposes as universal semantic primitives (cf. Wierzbicka 1972, 1996; Goddard & Wierzbicka 1994, 2002a)—by describing how this language expresses feelings.¹

1. REVIEW OF THE NSM RESEARCH PROGRAM. According to the NSM program, there is a set of indefinable and irreducible universal primitive concepts, which each have lexical exponents in every language; some of these primitive concepts are combined to analyze non-primitive concepts expressed by a vast majority of words in languages. There are about sixty primitives proposed by the latest version of the NSM program (Goddard 2002:14, Wierzbicka 2006:122). For each of the primitives, there are canonical sentences, which are constructed together with other primitives and can be translated into any language with no difference in meaning (Goddard & Wierzbicka 1994, Wierzbicka 1996). However, even though the claims made by the NSM are alleged to be based on crosslinguistic data, of the approximately thirty languages that it has examined, there are only two African languages: Amharic (Ethio-Semitic) and Ewe (Niger-Congo); it has not looked at any Cushitic languages.

One of the proposed primitives is *FEEL*, which does not differentiate between mental feelings and physical feelings. Its universality has been the underpinning of the NSM theory of language and feeling, which claims that *FEEL* is a universal concept (Wierzbicka 1999a, 1999b; Harkins & Wierzbicka 2001), though the concept of emotion and individual emotions (e.g. 'anger', 'fear', etc.) are both culture-bound and neither of them are universal concepts. According to NSM theory, the Darwinian notion of 'basic emotions' (cf. Ekman & Friesen 1986: happiness, sadness, fear, disgust, anger, surprise, and contempt) is ethno-centric because, by the use of these words, their English meanings are imposed on the 'basic emotions', despite the fact that human emotions vary greatly across languages and cultures. NSM researchers note that words in different languages which refer to similar emotive concepts are actually different in meaning and also that words for individual emotions in one language are often untranslatable to another language. NSM therefore argues that if there is any basic emotion or conceptual element pertaining to emotion, it should not be defined by a word in any particular language, but should be described through culture-independent, universal terms, such as the primitives that the NSM proposes.

NSM theory clearly states that '[a]ll languages have a word for *FEEL*' (Wierzbicka 1999a:36, 1999b:15). From this, it hypothesizes that by using the word for *FEEL*, any language can

construct universally translatable canonical sentences for this primitive such as the following: (i) I feel good/bad, (ii) I feel like this (Goddard & Wierzbicka 1994:52).

There are counterexamples to the lexical universality of FEEL that have been put forward from several languages (e.g. Lutz 1988, Michelson 2002), but NSM has reformulated the principle of the lexical universalism of FEEL to defend itself from them. According to the current version of the NSM program, any language that appears not to have a word for FEEL can compensate in one of several ways. In some languages, a perception verb (e.g. a verb for 'see', a verb for 'hear') may be used to express FEEL (Goddard & Wierzbicka 1994:65–67, 2002b:63–64). Another way that some languages may express FEEL is through body part terms (often, terms for internal organs like 'liver', 'stomach', and 'insides') (Goddard & Wierzbicka 1994:63–65, 2002b:64). In this case, expressions with body part terms such as 'My liver/stomach is good/bad' and 'My insides are good/bad' mean 'I feel good/bad.' However, as shown below, Sidaama even defies these NSM solutions to the counterexamples.

2. FEELING EXPRESSIONS IN SIDAAMA. Sidaama is a Highland East Cushitic language spoken in South Central Ethiopia (Kawachi 2007, in press a, in press b, in press c). The word order is predominantly SOV, and the case-marking is accusative. This section describes how Sidaama expresses feelings without a word for FEEL.

2.1. ADJECTIVES AND ADVERBS. First of all, even if Sidaama had a verb like the English verb *feel*, it has no adjectives or adverbs that could be used with that verb to express how one feels.

Though it has adjectives for 'good' and 'bad' (*danča* and *buša*, respectively), Sidaama cannot express one of the proposed NSM canonical sentence patterns for FEEL: 'I feel good/bad.' The Sidaama literal translations of 'I am good/bad' (*ani danča=te/buša=te*. [1SG.NOM good=PRED.F/bad=PRED.F]) and 'I became good/bad' (*ani danča/buša ikk-ummo*. [1SG.NOM good/bad become-PERF.1SG.M]) actually mean 'I (F) am a good/bad person' and 'I (M) became/am a good/bad person', respectively. Therefore, they are used for someone's personality, not their feelings.

Sidaama has adjectives for mental states, but all of them are derived from state-change verbs discussed in Section 2.2 and concern inherent mental states or personality traits: e.g. *dadill-aančo* 'always worrying' (*dadill-* 'become worried'), *hagiid-aančo* 'always happy' (*hagiid-* 'become happy'), *wajj-aančo* 'becoming afraid easily' (*wajj-* 'become fearful'), *hank'-aaleessa* (M)/*hank'-aaleette* (F) 'getting angry easily' (*hank'-* 'get angry'). It has a few adjectives for physical predispositions that are also derived from state-change verbs: e.g. *mug-aančo* 'always sleepy' (*mug-* 'become sleepy'). However, Sidaama lacks adjectives for non-inherent mental states including emotions and for non-inherent physical states.

Sidaama has no lexical adverbs that express the ways one feels. Manner adverbials can be formed from adjectives and the suffix *-gede* 'like': *danča-gede* [good-like] 'well', *buša-gede* [bad-like] 'badly', *lowo-gede* [large-like] 'greatly'. They are used only to describe skill in performing an action or the manner of an action, not for feelings, however. Moreover, the demonstrative adverbs, *togo* 'like this' and *hatto* 'like that', cannot be combined with any verb to express 'I feel like this/that.'

2.2. VERBS. Sidaama does not have a verb that refers to FEEL. There is no verb that is analogous to the English verb *feel*, nor is there a verb like *perceive* or *sense*. Furthermore, none of the Sidaama perception verbs (*la'* 'see', *mačč'isš-* 'hear', *su'nis-* 'smell', *kis-* 'touch', *k'ammas-* 'taste') can serve as a general perception verb for FEEL.

All the verb roots for both mental and physical feelings in Sidaama express change of state.² Examples are shown in (1):

- (1) *bagiid-* 'become happy', *maalal-* 'become surprised', *wajj-* 'become fearful', *mas-* 'become shocked', *dadill-* 'become worried', *šoll-* 'become dishonored/ashamed', *hamaššid-* 'become jealous', *errab-* 'become embarrassed', *gaabb-* 'become regretful', *marar-* 'become sympathetic/sad/disappointed/concerned', *saal-* 'become shy', *č'eem-* 'become bored', *bag-* 'become tired of', *daafur-* 'get tired', *damm-* 'become numb', *dimb-* 'get drunk', *hudid-* 'become hungry', *good-* 'become thirsty', *damuu'm-* 'get a headache'

These verbs take an experiencer as subject. When the state-change verbs are in the perfect aspect, as in (2) and (3), they express a state-change event that has already happened; the new state, which the referent of the subject NP has entered as a result of the state change, is interpreted as continuing at the time of utterance, as suggested in the glosses for (2) and (3). (Sidaama has two perfect aspect suffixes, which are interchangeable in many cases, but only one of them is used throughout this paper).

- (2) *hank'-itu.*
become.angry-PERF.3SG.F
'She has gotten angry (and is angry now).'
- (3) *mug-gu.*
become.sleepy-PERF.3SG.F
'She has become sleepy (and is sleepy now).'

Thus, because the experiencer's current mental and physical states, for which many languages use adjectives, can be depicted as temporary conditions resulting from state changes by the perfect forms of the state-change verbs, Sidaama can do without adjectives for non-inherent mental and physical feelings.³

The causative forms of many intransitive state-change verbs take the experiencer as direct object, and can use an impersonal third-person singular masculine subject, which is indicated by a verb suffix (represented as fused with an aspect suffix into a portmanteau suffix in the present paper). In (4) and (5), the subject is impersonal, as in (a), unless the stimulus or cause is interpreted as a third-person singular masculine referent, as in (b).

- (4) *hank'-is-i-se.*
 become.angry-CAUS-PERF.3SG.M-3SG.F
 a. 'She has gotten angry (and is angry now)'. (lit. 'IMPERS.3SG.M has caused her to get angry'.)
 b. 'He has made her angry (and she is angry now)'.
- (5) *mug-is-i-se.*
 become.sleepy-CAUS-PERF.3SG.M-3SG.F
 a. 'She has become sleepy (and is sleepy now)'. (lit. 'IMPERS.3SG.M has caused her to become sleepy'.)
 b. 'He has made her feel sleepy (and she is sleepy now)'.

There are also a few transitive verbs that take the impersonal third-person singular masculine subject.

- (6) *dīw-i-se.*
 cause.sickness-PERF.3SG.M-3SG.F
 'She has gotten sick (and is sick now)'. (lit. 'IMPERS.3SG.M has caused her sickness'.)
- (7) *anga t'iss-i-se.*
 arm(OBL) cause.pain-PERF.3SG.M-3SG.F
 'She has come to feel a pain in her arm (and feels the pain now)'. (lit. 'IMPERS.3SG.M has caused her pain with respect to the arm'.)

As shown above, Sidaama has verbs for various types of both mental and physical feelings. The semantic component of *a specific way one feels* is always 'conflated' (Talmy 1985) with that of *coming to feel x* in any of the verb roots for state changes involving feelings. The same is true for *causing to feel* in the case of the transitive verbs in (6) and (7). Thus, this language does not need a verb for FEEL.

2.3. BODY PART TERMS. Sidaama has no noun that would correspond to *feeling* in English, but it has two internal body part terms that are used in various idiomatic expressions involving mental states: *wodana* 'heart' and *godowa* 'stomach.' However, neither of these can be claimed to be exponents of FEEL for the following reasons.

First, unlike body part terms in other languages, neither *wodana* nor *godowa* can be used to express any of the canonical sentences for FEEL. The Sidaama sentences for 'My heart/stomach is good/bad' (*wodan-i-ya/godow-i-ya danča=ho/buša=ho*. [heart-NOM-1SG.POSS/stomach-NOM-1SG.POSS good=PRED.M/bad=PRED.M]) can mean 'I am a nice/cruel person', but they never express any feeling. The sentences for 'My heart/stomach got better' (*wodan-i-ya/godow-i-ya woyyaw-i* [heart-NOM-1SG.POSS/stomach-NOM-1SG.POSS get.better-PERF.3SG.M]) cannot be used generally for feelings either, though they may be used literally to mean 'My heart/stomach physically has recovered from illness.'

Second, when idiomatic expressions with *wodana* and *godowa* are used for feelings, they are restricted to mental feelings, and cannot be used for physical feelings. If either of these were proposed as an exponent of FEEL, it would be contradictory to the NSM claim that FEEL does not differentiate between mental and physical feelings.

Moreover, idiomatic expressions with *wodana* and *godowa* are generally not restricted to (mental) feelings, but can also be used for personality traits and thought, which are not feelings. There are three patterns of expressions corresponding to the three major types of syntactic environments where these words can be used idiomatically. Whereas one of them involves feelings, the other two do not. Each pattern is described below. (Note that, as indicated in the examples below, there are expressions where either *wodana* or *godowa* can be used, normally interchangeably and without any difference in meaning, and expressions where only one of them can be used.)

In one pattern, *wodana* and *godowa* are subjects of intransitive verbs, usually state-change verbs, or direct objects of transitive verbs.

- (8) *hakko od-i-nni wodan-i-'ya/godow-i-'ya*
 that.M.GEN news-GEN-with heart-NOM-1SG.POSS/stomach-NOM-1SG.POSS
mas-i.
 get.shocked-PERF.3SG.M

'I have become concerned/am concerned (lit. My heart/stomach has gotten shocked) with the news'. (This expression is usually used by a female speaker.)

- (9) *wodana-si/godowa-si giir-tu.*
 heart(ACC)-3SG.M.POSS/stomach(ACC)-3SG.M.POSS burn-PERF.3SG.F
 'She irritated him'. (lit. 'She burned his heart/stomach'.)

When they are used this way, these idioms usually express emotions. Examples of such expressions (abridged to a combination of 'heart' or 'stomach' and a verb) are shown in (10):

(10) a. **subjects of intransitive verbs:**

heart: *mudid-* 'become disappointed/sad' (lit. 'bleed'), *be'i ass-* 'become worried' (lit. 'produce the onomatopoeic sound *be'i*'), *fooliššid-* 'settle, relax' (lit. 'take a rest'), *uurr-* 'get excited' (lit. 'stand')

b. **direct objects of transitive verbs:**

heart: *hiikk-* 'disappoint' (lit. 'break'), *kis-* 'move, hurt' (lit. 'touch'), *ad-* 'attract' (lit. 'take'), *moor-* 'fascinate' (lit. 'steal'), *tum-* 'frighten' (lit. 'pound');
stomach: *šaššaf-* 'shock' (lit. 'agitate')

In the second and third patterns, idiomatic expressions with *wodana* and *godowa* do not refer to any feeling at all. In the second pattern, *wodana* or *godowa* is usually the subject of an adjectival or nominal predicate, occasionally a state-change verb, or is sometimes attributively modified by an adjective or noun.

- (11) *wodan-i-si/godow-i-si* *kaaŋa=ho.*
 heart-NOM-3SG.M.POSS/stomach-NOM-3SG.M.POSS strong=PRED.M
 'He is cruel or unkind'. (lit. 'His heart/stomach is strong'.)

Idioms of this pattern do not express feelings; the possessor of the heart or stomach does not feel anything at all. These expressions concern personality traits (with only a few exceptions: e.g. heart/stomach: *siwiila* 'physically strong, sophisticated' [lit. 'iron']). Other examples of this pattern are listed in an abridged way in (12):

- (12) a. **heart/stomach:** *t'alala* 'straightforward, open-hearted' (lit. 'clear'), *šakk'ado* 'kind' (lit. 'soft'), *kinčo* 'sophisticated' (lit. 'a stone'), *harriččo* 'timid' (lit. 'a donkey'), *hamaššo* 'malicious' (lit. 'a snake')
 b. **heart:** *lowo* 'too ambitious' (lit. 'big'), *šiima* 'childish' (lit. 'small'), *wo'ma* 'not caring' (lit. 'full'), *airrado* 'too sophisticated' (lit. 'heavy'), *bubbe* 'undependable' (lit. 'wind'), *wošiččo* 'unsophisticated, easily forgetting things' (lit. 'a dog'), *koliššo* 'pessimistic, bleak, twisted' (lit. 'black'), *du'ma* 'carefree' (lit. 'fat')
 c. **stomach:** *hala'lado* 'patient' (lit. 'wide')

In a third pattern, *wodana* and *godowa* are usually used as part of an adverbial:

- (13) *wodan-u-nni/godow-u-nni* *agur-i-e.*
 heart-GEN-from/stomach-GEN-from forgive-IMP.2SG-1SG
 'Forgive me from the bottom of your heart'. (lit. 'from the heart/stomach')
- (14) *wodan-i-si/godow-i-si* *giddo no*
 heart-GEN-3SG.M.POSS/stomach-GEN-3SG.M.POSS inside come.to.exist.3
re af-ummo.
 things(ACC) get.to.know-PERF.1SG.M

'I (M) know/have come to know what he is really thinking'. (lit. 'the things that have come to exist in his heart/stomach'.)

In the preceding examples of this pattern, *wodana* and *godowa* are treated as the location of their possessors' seriousness, sincerity, honesty, or consideration; often, these are only accessible to their possessors. English translations of other examples are given in (15):

- (15) a. **heart/stomach:** 'love someone' (lit. 'someone has come to exist in one's heart/stomach'), 'be none of one's business anymore' (lit. 'exit from one's heart/stomach'), 'work/dance, etc. seriously' (lit. 'work/dance, etc. from one's/the heart/stomach')

- (15) b. **heart**: ‘take something into consideration’ (lit. ‘something has come to exist in one’s heart’), ‘take something seriously’ (lit. ‘put something in the heart, take something with one’s/the heart’), ‘keep something confidential’ (lit. ‘hide something in one’s heart’), ‘think/take someone’s advice, etc. seriously, deeply’ (lit. ‘think/take someone’s advice, etc. with one’s/the heart’)
 c. **stomach**: ‘conceal one’s surprise’ (lit. ‘hide one’s surprise in one’s stomach’)

Therefore, idiomatic expressions that use *wodana* and *godowa* are not devoted to feelings, and can convey other types of mental states, depending on which construction is used. Even when they are used for feelings, they are limited to mental feelings and cannot be used for physical sensations.

3. LACK OF AN EXPONENT FOR *FEEL* AND THE USE OF A BODY PART TERM FOR FEELINGS. This section shows that the lack of an exponent for *FEEL* in a language does not necessarily motivate the use of a body part term for feelings in that language by comparing Sidaama with Amharic (Ethio-Semitic), a language geographically close to, yet only distantly related to, Sidaama.

Amberber (2001:37–42) describes feeling expressions in Amharic in the NSM framework. As he states, this language has a verb for *FEEL*, *samma*, which is neutral to the distinction between mental and physical feelings; it can also mean ‘hear’ in some morphosyntactic environments, where it does not mean *FEEL*.

On the other hand, Amharic can use words for ‘heart’ (*libb*) and ‘stomach’ (*bod*) in various idiomatic expressions like those in Sidaama, and they follow basically the same patterns as Sidaama expressions using *wodana* and *godowa*. Their uses overlap considerably, though they do not necessarily match with each other.

Like the first pattern in Sidaama, the Amharic words for ‘heart’ and ‘stomach’ can be used as the subject of an intransitive verb or the direct object of a transitive verb to express emotions. Like Sidaama expressions of the second pattern, Amharic expressions where adjectives or nouns predicate or attributively modify *libb* or *bod* also express personality traits but not feelings. When *libb* and *bod* are used as parts of adverbials, they are also usually treated as the locus of serious thought or private thought.

Amharic has some expressions that Sidaama lacks (e.g. ‘ambitious’ (lit. ‘mountain heart’), ‘hurt someone’s heart’, ‘close one’s heart’), and some Sidaama expressions may not be commonly used in Amharic (*mudid*- ‘become disappointed/sad’ (lit. ‘bleed’)). There are also a few expressions with ‘heart’ and ‘stomach’ in Sidaama and Amharic that are translated word for word into English the same ways but actually have different meanings. For example, ‘open someone’s heart’ means ‘come to have a good manner, listen to someone’s advice’ in Sidaama, but means ‘reveal one’s real intention’ in Amharic. Nevertheless, Amharic can use many of the Sidaama expressions in (8)–(15) in the same way:

- (16) a. **heart/stomach**: ‘become concerned’ (lit. ‘get shocked’), ‘sophisticated’ (lit. ‘a stone’), ‘timid’ (lit. ‘a donkey’)

- (16) b. **heart**: ‘settle, relax’ (lit. ‘take a rest’), ‘get excited’ (lit. ‘stand’), ‘fascinate’ (lit. ‘steal’), ‘too sophisticated’ (lit. ‘heavy’), ‘not caring’ (lit. ‘full’)
 c. **stomach**: ‘patient’ (lit. ‘wide’)

Therefore, the use of the body part terms for (mental) feelings and related concepts in Sidaama is not motivated by or even related to the lack of a lexical exponent for FEEL in this language.

4. CONCLUSION. To summarize, Sidaama does not have any lexical exponent for FEEL. This challenges the fundamental hypothesis of the NSM program that FEEL is a lexical universal. Idiomatic expressions with the words for ‘heart’ and ‘stomach’ in Sidaama are restricted to mental feelings and cannot be used for physical feelings. Neither of these terms can be exponents for FEEL, which does not differentiate between mental and physical feelings. In fact, the use of body part terms for feelings is irrelevant to the lack of an exponent of FEEL in Sidaama. Because of this, the correlation between them proposed by the NSM is groundless.

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² The verbs in (1)–(3) are all state-change verbs—their progressive forms characteristically express the process of entering a state, as in (i) and (ii):

- (i) *hank'-itannino*.
 become.angry-PROG.3SG.F
 ‘She is (in the process of) getting angry’
 (ii) *mug-gannino*
 become.sleepy-PROG.3SG.F
 ‘She is (in the process of) becoming sleepy’.

³ The difference between adjectives and verbs that refer to feelings lies not so much in duration as in inherency—adjectives are used for inherent mental and physical states, whereas verbs are used for non-inherent ones. Although their perfect forms express short-term mental and physical states, state-change verbs are not restricted to short-term ones. As in (iii) and (iv), recurrent or frequent state changes expressed by the imperfect forms of some state-change verbs (e.g. *bat'* ‘come to like’, *gib-* ‘come to hate’, *hasid-* ‘come to want’) express long-lasting states including current states as recurrent or regular state changes.

- (iii) *bat'-anno-se*.
 come.to.like-IMPERF.3SG.M-3SG.F
 ‘He (always) likes her’. (lit. ‘He comes to like her (regularly/habitually)’).
 (iv) *waasa it-a hasi'r-anno*.
 waasa(ACC) eat-INF come.to.want-IMPERF.3
 ‘He wants to eat waasa (all the time)’. (lit. ‘He comes to want to eat waasa (regularly/habitually)’).

Like other state-change verbs, the perfective forms of these verbs express temporary states as resultative states, as in (iii)' and (iv)'.

(iii)' *bat'-i-se*.

come.to.like-PERF.3SG.M-3SG.F

'He likes her (now)'. (lit. 'He came to like her')

(iv)' *waasa it-a hasi'r-i*.

waasa(ACC) eat-INF come.to.want-PERF.3SG.M

'He wants to eat waasa (now)'. (lit. 'He has come to want to eat waasa')

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THE NASAL APPENDIX IN CANADIAN FRENCH

STEPHANIE KELLY, FRANÇOIS POIRÉ & DARCIÉ WILLIAMS

University of Western Ontario

NASAL VOWELS SOMETIMES OCCUR WITH A NASAL APPENDIX,¹ characterized by the abrupt loss of any formant structure exceeding 1000 hertz and the appearance of a very low-frequency voiced nasal formant (Ohala & Ohala 1991). Given that nasal vowels are very often historically derived from nasal consonants in coda position, this appendix occurs in the same position as the nasal consonants still present in the language. French offers us an interesting situation in this regard, given the productive alternation between these two classes of segments. For example, many nouns and adjectives distinguish the masculine from the feminine by the alternation $V_{nas} \# \sim V + C_{nas} \#$, (1)a. Liaison shows the same alternation with or without denasalization of the vowel (1)b and c. Moreover, many nasal vowels are never involved in this kind of alternation, (1)d. Furthermore, certain varieties in the South of France produce nasal vowels as a sequence $V_{nas} + C_{nas}$ or $V + C_{nas}$, (1)e (Durand 1998).

- (1) a. [bō] ~ [bɔ̃] *bon ~ bonne* 'good' (masc. and fem.)
 b. [b ɔ̃ n a m i] *bon ami* 'good friend'
 c. [s ɔ̃ n a m i] *son ami* 'his friend'
 d. [l ā s e] *lancer* 'to throw'
 e. [p āⁿ t] ~ [p aⁿ t] *pente* 'slope'

Given the data in (1), two questions arise. The first concerns the phonetic conditions contributing to the appearance of this appendix. The second concerns its phonological relationship with the nasal consonant that is both diachronically and synchronically linked to this position, particularly if the alternations illustrated above in (1)a and b are analyzed on the basis of phonological nasal consonants.

Our principal aim is to describe the distribution of the nasal appendix as a function of the immediate segmental environment as well as with regard to the origin of the nasality of the vowel. We examine the potential relationship of the appendix to an underlying nasal consonant in a corpus of French speakers from the Windsor region of Canada. Section 2 examines the presence of the nasal appendix in light of the phonetic analysis of Ohala and Ohala (1991). In section 3, we discuss the methodology. The results are presented in section 4, beginning with a discussion of the phonetic context surrounding the appearance of this nasal appendix with the aid of a multivariate analysis, followed by a study of the duration of the nasal appendix. The article closes with a discussion of our findings.

2. NASAL CONSONANTS AND THE NASAL APPENDIX. **Figure 1** is drawn from a reading passage and presents three nasal vowels, two of which show a nasal appendix. The first

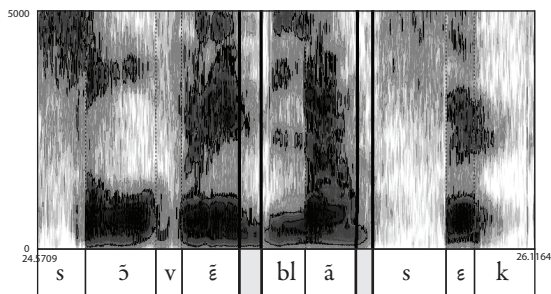


Figure 1. Two examples of the nasal appendix (in gray with bold black borders) drawn from the sentence *son vin blanc sec* 'its dry white wine' of the Windsor French corpus.

occurs after the vowel [ɛ̃] of the word *vin* 'wine', while the second occurs after the vowel [ã] of *blanc* 'white'. In the first case, the following consonant is the voiced stop [b], a fertile context for the production of the appendix according to Ohala and Ohala (1991), while in the second case, the context to the right is the voiceless fricative [s], a context that is not reported in their analysis. For comparison purposes, a true nasal consonant [n] in postvocalic position is distinguished from the appendix by means of a longer duration and a larger nasal formant.

The nasal appendix occurring before a voiced stop surfaces as a case of what Maddieson and Ladefoged (1993:269) call *derived prenasalised stops* rather than *underlying* prenasalised stops: derived and underlying prenasalised stops do not have the same distinctive status in a given phonological system. We note that prenasalised consonants, derived or underlying, are not typically derived from a $V + C_{\text{nas}}$ sequence such as those analysed here. Consequently, the presence of a nasal consonant, whether synchronic or diachronic, is not necessary for the appearance of the nasal appendix.

Ohala and Ohala (1991, 1993) discuss the nasal appendix in Hindi and in French from samples of monitored speech that use exclusively stops in the following context. These two languages both have nasal vowels that are historically derived from $V + C_{\text{nas}}$ sequences, all the while maintaining the possibility of true nasal consonants occurring in post-vocalic position. The authors therefore analyse the $V_{\text{nas}} + \text{appendix} + C$ sequences as cases of prenasalised stops, the appendix being the result of the incomplete raising of the velum leading to velic leak. Their analysis is as follows:

The question we need to answer is: 'Why should voiced stops tolerate velic leakage during the first part of their closure and still be perceived as voiced stops?' The reason may be that among the auditory cues for a voiced stop, there must be a discontinuity of the spectrum and amplitude with respect to neighbouring sonorants (if any), low amplitude voicing during its closure, and termination in a burst. These requirements are still met, even with velic leakage during the first part of the stop, as long as the velic valve is closed just before the release and pressure is allowed to build up behind the closure. However, voiceless stops have less tolerance for such

leakage because any nasal sound—voiced or voiceless—undercuts either their stop or their voiceless properties. (1991:213)

Thus, if the consonant is a voiced noncontinuant, the appearance of the appendix is linked to the coarticulation of the nasal vowel and the following consonant, the prolonged nasality (or the incomplete closure of the velum) having no major consequences for perception. The authors do not exclude the possibility of the appendix occurring before a voiceless stop, but in this case the stop duration would be much shorter.

More recently, Adda-Decker *et al.* (2006) examine tokens of nasal vowels in six varieties of continental French, three of these from the South of France, taken from the *Phonologie du français contemporain* (PFC) surveys (reading passage for 36 speakers). More than 15% of the nasal vowels produced in the Northern France varieties show an appendix, compared to nearly 40% in the Southern varieties. In the majority of cases, the appendix is identified as [n] and sometimes [m] for speakers from the South. Moreover, nearly half of all tokens appear after [ã]. However, the authors indicate neither the context immediately following a nasal vowel token nor the duration of an appendix. Finally, the nasal appendix regularly occurs after a denasalized vowel.

Unlike the data from Adda-Decker *et al.* (2006), the nasal vowels of our corpus are not denasalized when accompanied by an appendix. In fact, the appendix is not perceived by native speakers and is therefore not identified as an [m] or an [n].² Furthermore, as is clear in the next section, the appendix even occurs occasionally before a fricative or a pause.

3. METHODOLOGY.

3.1. THE DATA. Our four female speakers, ranging in age from 16 to 88, are drawn from the PFC-Windsor corpus (Poiré & Kelly 2003). The PFC project (Durand, Laks & Lyche 2003) is a vast dialectological survey initiated in 2000 which seeks to create a database of spoken French from all Francophone regions worldwide. Each survey includes twelve speakers who are asked to read a word list and a short text, as well as to participate in a semi-directed conversation and in a free conversation. For this study we examine data from two styles: the reading passage (400 words or two minutes in length) and the semi-directed conversation (five minutes of speech). In the case of the reading style, it is a matter of comparing the appendix from our corpus to those described in the literature (Ohala & Ohala 1991, 1993; Maddieson & Ladefoged 1993), which are usually drawn from corpora of monitored speech. We include an analysis of the second style in order to study the phenomenon in spontaneous speech.

The francophone community of Windsor, Canada exists in a minority situation, and for this reason a large number of its members show obvious signs of influence from English (Béniak & Mougeon 1989). Since nasal vowels are absent from the phonological inventory of the dominant language, it is possible that this influence shows up through a difference in vowel nasality (Delattre 1965) having a potential effect for the nasal appendix. Speakers AA1 and AA2 demonstrate a variety of French which shows a number of apparent traces of English; thus, the label AA, *Anglais* 'English' indicates an English dominant speaker showing obvious signs of influence from English. This is not, however, the case for speakers FF1 and

		+appendix		−appendix		total	+appen.	−appen.	Total
		N=	%	N=	%				
Reading	AA1	28	33 %	55	66 %	83	121 (34%)	238 (66%)	359
	AA2	32	35 %	62	65 %	94			
	FF1	35	39 %	57	61 %	92			
	FF2	26	29 %	64	71 %	90			
Conv.	AA1	23	16 %	123	84 %	115	124 (22%)	454 (78%)	578
	AA2	35	20 %	149	80 %	184			
	FF1	36	28 %	97	72 %	133			
	FF2	23	16 %	123	84 %	146			
Total									937

Table 1. Distribution of data from each speaker across two styles.

FF2, for whom the label FF indicates a French dominant speaker with no evidence of influence from English. For historical and social reasons, this factor of the influence of English is often correlated to the age of French-Canadian speakers in a minority situation. Our four speakers are respectively:

- (2) AA1: 16 years; AA2: 41 years; FF1 60 years; FF2: 88 years

The mono recordings (22,000 hertz) are analyzed using PRAAT. All the nasal vowels are segmented including nasal appendices, if any.

Table 1 shows the distribution of the data for each speaker across two styles. Of the 937 nasal vowels analyzed, 34% from the reading passage and 22% from the conversation show the presence of a nasal appendix.

3.2. CODING THE DATA. Many factors, both linguistically internal and external, are coded in our database; this allows for two types of analysis. The first is a multiple regression analysis using Goldvarb 2001 (Robinson *et al.* 2001), which allows us to determine the statistically significant factors in the presence of the nasal appendix. The second examines the duration of nasal vowels with and without an appendix. The structural factors coded are the following:

- (3) a. presence / absence of the appendix (duration where applicable)
 b. the nasal vowel (and its duration)
 c. the following context (segments, pause)
 d. the nature of the following boundary
 e. the origin of the nasal vowel

Two of these factors require further explanation. First, we are attempting to verify if different types of boundaries occurring between the nasal vowel and the following segment play a role in the appearance of the appendix. If the appendix is viewed as the prenasalization of the following consonant (Maddieson & Ladefoged 1993), it is possible that a strong boundary (word boundary, for example) might impede or at least disfavor the appearance of the appendix.

Secondly, we pay particular attention to the phonological origin of the nasal vowel. Following Tranel (1992), we establish five categories of phonological origins for nasal vowels: derived or not from a nasal consonant, involved or not in morphological alternations, with or without denasalization in liaison contexts.

We also retain extralinguistic factors for the Goldvarb analysis:

- (4) a. speaker
- b. age
- c. influence from English
- d. style

Recall that our speakers form two groups with respect to the apparent influence of English on their French pronunciation. However, as we have already mentioned, in these communities, this factor is often related to the speaker's age. We must then relativize this factor, particularly with such a small sample. But as we will see, neither age nor influence of English, nor the individual speaker's grammar stand out as statistically significant in predicting the presence of this variable.

4. RESULTS.

4.1. THE LINGUISTIC CONTEXT OF THE APPEARANCE OF THE NASAL APPENDIX. The Goldvarb program allows us to evaluate the relative significance of different linguistic and social factor groups in the appearance of a discrete independent variable. After several analyses, three factor groups are identified as having a statistically significant influence on the appearance of the nasal appendix. These are style, nasal vowel quality and the phonotactic context in the following position. **Table 2** (overleaf) gives the details of this analysis.

A factor weight of .500 and greater favours the application of the variable, while conversely, factor weights inferior to .500 disfavor the application of the variable. The greater the range or difference in weight between the highest and the lowest factor in a group, the more significant the effect of that group of factors. Given the smaller, and therefore, less significant range for the factor groups of style and nasal vowel, the range of 53 for the following phonotactic context indicates that this group plays the most significant role in determining the application of the variable. Upon closer examination of the factors in this group, it is clear that a voiced stop remains the principal factor in the appearance of the appendix, which corresponds to the analysis of Ohala and Ohala (1991). However, we find some cases of a nasal appendix before voiceless stops, fricatives and even before pauses. **Table 3** (overleaf) shows the distribution of all tokens of nasal vowels with and without a nasal appendix.

	Input 0.279	NAPP	N	%	Factor weight
Style	reading passage	120	302	39.7	0.580
	conversation	122	435	28.0	0.444
	range: 14				
Nasal vowel	â:	141	376	37.5	0.571
	õ	53	186	28.5	0.441
	œ	11	42	26.2	0.431
	ë	37	133	27.8	0.403
	range: 17				
Phonotactic context (right)	voiced stops	89	147	60.5	0.781
	voiceless stops	81	228	35.5	0.549
	voiceless fricatives	34	152	22.4	0.375
	pause	30	144	20.8	0.365
	voiced fricatives	8	66	12.1	0.247
	range: 53				

Table 2. Occurrence of nasal appendix, NAPP = number of vowels with the appendix, N = total number of nasal vowels; % = percentage of nasal vowels with appendix. *P* = 0.009.

	Reading passage				Conversation			
	+appendix		-appendix		+appendix		-appendix	
	N=	%	N=	%	N=	%	N=	%
voiceless stop	38	40%	57	60%	43	33%	90	67%
voiced stop	44	66%	23	34%	45	56%	35	44%
voiceless fric.	17	43%	23	57%	17	15%	95	85%
voiced fric.	5	22%	23	78%	3	8%	35	92%
Sonorants	1	2%	55	98%	0	0%	116	100%
Vowels	0	0%	5	100%	1	5%	24	95%
Pauses	16	23%	56	77%	14	20%	59	80%

Table 3. Distribution of the nasal appendix for following phonotactic context.

We can state, then, that if the consonant following the nasal vowel is a voiced stop, the appendix occurs in more than 50% of the tokens (66% for the reading passage, 56% for conversation). We note also that the fricatives show exactly the opposite situation to that of the stops; whereas voicing in stops favours production of the appendix, it is the lack of voicing that favours the production of an appendix for fricatives in the following context. Observe the absence of the appendix before sonorants and vowels.

	Reading passage				Conversation			
	+appendix		-appendix		+appendix		-appendix	
	N=	%	N=	%	N=	%	N=	%
ã:	70	41%	102	59%	73	25%	223	75%
õ	24	24%	77	76%	30	19%	132	81%
ẽ	21	32%	45	68%	16	20%	68	80%
œ	6	30%	14	70%	5	14%	31	86%

Table 4. Distribution of the nasal appendix for nasal vowel quality.

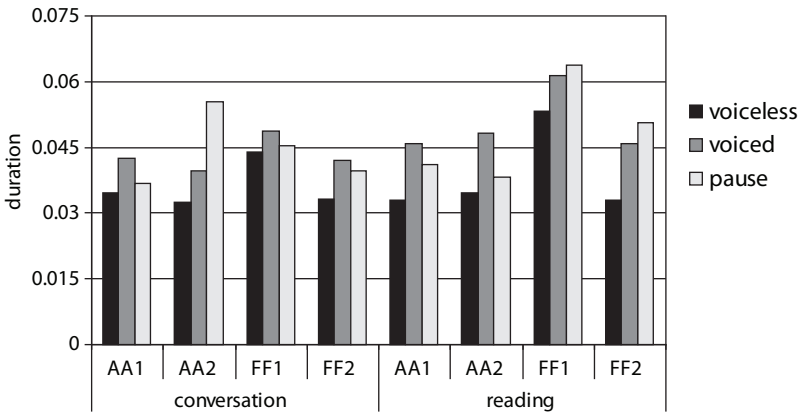


Figure 2. Average duration of the nasal appendix for four speakers across two styles according to the following context (voiced or voiceless consonants and pause).

The Goldvarb analysis also shows the relative significance of the nasal vowel quality itself. **Table 4** shows the exact distribution of tokens for this factor.

While the vowel [ã] represents more than 50% of the nasal vowel contexts for both styles, it is also the favorable factor in this group, and it is likewise implicated in more than 50% of all tokens with appendix.

4.2. DURATION OF THE NASAL APPENDIX. More than just favouring the production of a nasal appendix, voiced stops also play a significant role in the duration of the appendix: preceding appendices typically have a longer duration than that which we find for the appendix before a voiceless stop. We have therefore regrouped all tokens of the appendix with respect to voicing of the following consonant (stops and fricatives mixed). We also include the average values for the appendices produced before Pause. **Figure 2** shows these results for duration.

We can state that for the four speakers across two styles, the average duration of the appendix is greater if the consonant that follows the nasal vowel is voiced. We also note that the Pause is associated with an average appendix duration that always exceeds that

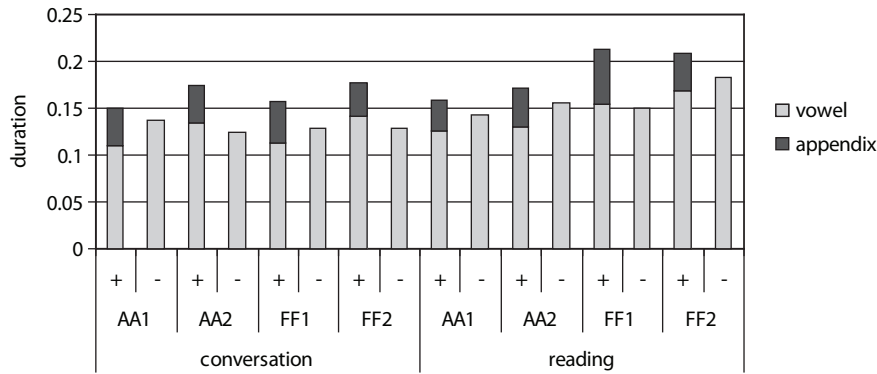


Figure 3. Average duration of the nasal vowel and of the appendix; + signifies the vowels with appendices, – signifies vowels without appendices.

of the appendix which is followed by a voiceless consonant, and sometimes exceeds that of the appendix which precedes a voiced consonant. The significance of the following context appears to be confirmed as the principal factor in the production of the appendix and the determination of its duration.

In **Figure 3**, we compare the total duration V_{nas} + appendix to the duration of nasal vowels that do not exhibit a nasal appendix, in an effort to verify at what point the appendix occurs during the production of the following consonant.

In all cases of the sequence V_{nas} + appendix, the duration is greater compared to that of the nasal vowel that surfaces without the appendix. One possible analysis of the appendix would be to consider the presence of a partially debuccalised nasal consonant (see section 5.2).

5. DISCUSSION AND CONCLUSION.

5.1. THE DURATION OF THE APPENDIX. With respect to the duration of the appendix, there are two points to consider. The first concerns the difference in duration of the appendix preceding a voiced consonant versus that of an appendix preceding a voiceless consonant. Our data confirm that the appendix occurring before a voiced consonant is longer than that which occurs before a voiceless consonant. In addition, we describe the occurrence of the appendix before a pause where the duration is often longer than that of appendices occurring before a consonant. The second point concerns the combination V_{nas} + appendix, where the duration is always greater than that of a nasal vowel occurring without an appendix.

5.2. THE DISTRIBUTION OF THE APPENDIX. The Goldvarb analysis identifies three factor groups that favour the production of the nasal appendix: style, vowel quality, and most significantly, the following phonotactic context. Given the small number of speakers in this corpus, we give minimal importance to the non-significance results for the external factors age, English influence and individual speaker. At present, we can offer no explanation for the fact that the reading style slightly favours the production of the nasal appendix over the conversation style. We suggest only that Adda-Decker *et al.* (2006), using the same reading

passage, also find a high rate of nasal appendix production. In their study, the nasal vowel [ã] is involved in a majority of tokens, as is the case in our own analysis. Is this simply a product of the high frequency of this phoneme in French? We cannot say. It would require a much more detailed analysis of this nasal vowel's quality. For example, in the varieties discussed, are we always dealing with the same back vowel? And why would such an articulation favour an incomplete velic closure? The question is particularly complex, given that Canadian French often discriminates between four possible timbres for a single speaker: [æ], [a], [ɑ] as well as a rounded version of the latter, [ɔ].

How do we interpret the fact that neither the following boundary nor the phonological origin of the vowel are found to be significant in the production of the nasal appendix? In the case of the former factor, an articulatory study might bring us closer to a response. As for the latter, a correlation between the phonological form and the phonetic form does not necessarily translate into an automatic realisation of underlying features.

With respect to the role of the following phonotactic context, our results broadly support the findings of Ohala and Ohala (1991), but unlike their data, our data show cases of a nasal appendix occurring before stops and fricatives, both voiced and voiceless, and even before pauses. With respect to the Windsor French data, voicing in the following segment is clearly not the only factor that determines the presence or absence of the appendix, particularly when the segment is a fricative. We can express the relative probability of seeing an appendix occur by way of a hierarchy as in (5).

- (5) Voiced stop > voiceless stop > voiceless fricative > voiced fricative

How then do we reconcile our findings with those of Ohala and Ohala (1991)? We believe that their analysis holds, but we would add to the hypothesis that velic leakage is a frequent phenomenon, independent of the phonotactic context at the right of the nasal vowel, and that it seems to be governed by constraints linked to perception. The presence of the appendix before all consonants and even before pauses is thus not in contradiction with their analysis. It would then be necessary to explain the interaction between nasality and the voicing of the appendix and the perception of fricatives. However, at least for the variety of French in the Windsor region, it seems that another constraint is in play, which does not seem to be the case for the European varieties. This constraint might be expressed as follows: avoid the perception of the appendix as a nasal consonant. If the appendix surfaces before a pause, it does so while often exhibiting considerable duration (**Figure 3**); it remains nonetheless true that it is not perceived as a nasal consonant by native speakers.

We are presented with two possible analyses for the phonological conditioning of this appendix. The first is that the appendix is the result of coarticulation between the nasal vowel and the following consonant, which Ohala and Ohala (1991) refer to as velic leakage or an imperfect closure of the velum. They attribute the presence of the nasal appendix to a voiced stop in the following context. We can keep this analysis, specifying that the coarticulation effect—and, thus, the presence of the appendix—is conditioned by any following voiced or voiceless stop or fricative as well as before pauses. The second possible analysis postulates the presence of a partially realised phonological nasal consonant

diachronically or synchronically linked to this position (see (2) for examples). We can therefore compare the duration of the nasal appendix to that of the nasal consonants by calculating the duration of nasal vowels both with and without nasal appendices. If the durations of the appendices are comparable to those of the nasal consonants, we could postulate the realisation of a debuccalized phonological nasal consonant—that is to say, a consonant without a specific place of articulation (Harris 1997). This lack of articulatory information would explain the absence of formant structure beyond that of the nasal formant.

This explanation has the advantage of accounting for the fact that an appendix survives, even in the absence of a segment that is voiced and noncontinuant in the following environment. On the other hand, **Figure 3** clearly shows that the appendix constitutes an augmented duration of the nasal vowel.

Many questions remain, and the data from a spontaneous speech corpus of this size do not allow us to answer them properly. One solution would be to use a larger corpus of monitored speech offering the same number of tokens for each context and for each nasal vowel. This is how we intend to proceed in the near future.

- ¹ We wish to thank Keren Rice for her comments at the annual meeting of LACUS, Toronto, August 2006. Thanks also to the anonymous reviewer of this paper for their valuable comments.
- ² It is perhaps interesting to note here that, while no perception tests were done to ascertain the nature of the appendix, none of the native speakers of Canadian French for whom we have played samples of passages containing the nasal appendices have reported perception of this phenomenon. However, the appendices were first reported as perceptible by two Anglophone researchers. A future study could perform perception tests on the two groups of native speakers—those of varieties with nasal appendices and those of non-appendix varieties—in order to determine whether the two groups report similarly with respect to their perception of the Windsor appendix.

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PRESCRIPTIVISM REVISITED

MICHAEL D. KLIFFER
McMaster University

I WILL START with remarks that will likely be obvious to linguists. In an introductory linguistics course, one of the major goals is to rid students of prescriptive biases and teach them to view language dispassionately, as a scientist examines any other kind of data. There are of course good reasons for this favouring of descriptivism. On both intellectual and social grounds, prescriptivism can be detrimental. It can prevent a student from seeing language in its true variety and scope. It can lead to grave injustices, as when social workers have treated Black English speakers in the U.S. as mentally deficient simply on the basis of their non-standard usage. It can be socially harmful in more diffuse ways, as in the shame which many French Canadians feel with regard to how they spontaneously use their native language. And, more importantly for our own discipline, I think we would all agree that it would be anathema for a linguist not to suspend any prescriptive bias during field work and subsequent phases of research.

Yet, as a running debate on *Linguist List* (1997, vol. 8, 1764–74) shows, we are far from unanimous on what to make of prescriptivism. Some contributors subscribed to an out-right bogeyman label for prescriptivism: for them, the above-mentioned injustices and intellectual blinkers associated with it justify a blanket condemnation. A roughly equal number took a more nuanced stance, arguing that even though prescriptivism is a non-starter in linguistic research methods, it is a force to be reckoned with in the mentality of many if not most native speakers. This paper presents evidence backing the latter view. It argues that prescriptivism cannot be ruled out in numerous activities which linguists perform, ranging from the teaching of linguistics to the analysis of certain phenomena imbued with purist assumptions.

1. TEACHING LINGUISTICS AND LANGUAGE. The prescriptive/descriptive divide is less clear-cut than is usually claimed in beginning linguistics classes. Most obviously, distinctions inherent in register variation generally have a correlation with prescriptive dictates. Moreover, if we simply condemn prescriptivism, students will notice a contradiction. Not only is our message out of sync with what they have been taught in language courses, but it also conflicts with our own linguistics teaching. Even though we routinely have the students learn concepts by having them describe and analyze their own usage, the very nature of teaching entails that sooner or later we resort to prescriptive declarations, if only for the purpose of summarizing. In a class where the teaching medium and source of data are not the students' native language, prescriptivism necessarily crops up even more often, in order to make up for the students' lack of native speaker intuition. For example, when teaching French linguistics to a largely anglophone class, the more subtle data crucial for demon-

strating analytic concepts will likely be taught prescriptively, as if it were part of a language course. Thus, it is surely more realistic to present prescriptivism and descriptivism at the outset as two distinct approaches, each appropriate in different circumstances and neither intrinsically inferior to the other.

2. ANALYZING LANGUAGE. To put it bluntly, prescriptivism is in the blood of native speakers. Bloomfield (1927) found that Menomini speakers distinguished 'good' from 'bad' speaking: they were obviously aware of register differences, even in the absence of a writing system and dialectal variation. Throughout the world, speakers generally perceive non-standard dialects to be inferior, as illustrated by enjoinders to speak 'nicely', e.g. standard German in Swiss-German communities. Often these prejudices are quoted in linguistics classes as proof of the evils of prescriptivism and hence descriptivism's superiority, but I show that even in mainstream linguistic analysis which ignores or minimizes sociolinguistic variables, prescriptivism is a factor that can't be dismissed.

Our case study involves French, which has known a tradition of purism and authoritarianism going back to seventeenth-century arbiters such as Malherbe. Still today, millions of francophones within and beyond France believe that correct French must be that prescribed by the Académie Française and that, whether one is a native speaker or not, one cannot speak proper French without having mastered school grammar.

2.1. SHIBBOLETHS. This paper deals with two shibboleths in French. Why this metaphor? Perhaps more than any other language of civilization, the mechanics of written French are daunting even for its most honoured litterati. We examine two phenomena which perpetuate a gate-keeper effect, which segregate the truly literate from the masses who recall most points of school grammar as well as the average citizen remembers chemistry valences.¹

2.1.1. SHIBBOLETH 1: THE PLURAL OF COMPOUND NOUNS. According to Grevisse (1994), the most respected and detailed opus on written French usage, the plural of compound nouns is indisputably the most difficult part of French grammar. It is not hard to see why: this is an area where speech and writing are most at odds. In spoken French, nothing could be easier to learn: all compound nouns are invariable, the plural being indicated, as with other nouns, by the form of the determiner. With non-compounds the written language routinely adds a final *s*, whereas when writers are faced with having to render the plural of a compound noun, their reaction is usually to check the dictionary first, no matter how familiar they are with the rules that school masters have drummed into them. To give even an outline of the rules, exceptions to them, and exceptions to exceptions would take several pages, but a few remarks with illustrations will suffice to show how arcane the rules are.

Many compounds obey the principle that only units that are themselves nouns and notionally plural within the compound occur with a final *s*, e.g. *timbres-poste* 'postage stamps', *avant-postes* 'outposts, vanguard', *lave-vaisselle* 'dishwasher(s)', *voitures-bars* 'bar cars (on a train)'. Moreover, even when the compound itself is singular, the notionally plural element has taken the *s*: *un porte-avions* 'aircraft carrier', *un compte-gouttes* 'dropper'. I use the present perfect 'has taken' because the 1990 spelling reform restricted the value of *s* to plural of the

entire compound, hence the present official alternation is *un porte-avion* vs. *des porte-avions* and *un compte-goutte* vs. *des compte-gouttes*. Even after 16 years, this reform has yet to become universal. Moreover, the original sense or non-nominal status of a unit may still preclude addition of *s*, as in *des trompe-la-mort* 'death dodgers' and *des prie-Dieu* 'prayer desks'. As a final example, certain nouns remain invariable for etymological reasons, e.g. *des terre-pleins* 'highway median strips', where *terre* 'land' is historically a complement of *pleins* 'full', i.e. 'full of earth'. These principles in themselves are not irrational; indeed they reflect a respectable effort at sorting out the conflicting criteria inherent within compounds, i.e. the original status of the constitutive nominal elements vs. the compound's holistic plural sense. The problem is that speakers do not generate compounds in the same way they handle productive structures: just as English speakers acquire irregular plurals as idiosyncratic lexical facts, even the most literate French speakers don't bother to assimilate the rules by which grammarians have tried to rationalize compound plurals. Why not? Arguably, because the rules demand an elaborate meta-linguistic awareness of each internal unit's syntactic and semantic make-up: is the unit a noun, and if so, is it count or mass? Is the plurality distributive (e.g. *un wagon-restaurant* vs. *un wagon-lits*)? Is the use figurative (*des croque-monsieur* 'grilled ham and cheese sandwiches')? Moreover, prescriptive dictates have often been inconsistent, e.g. *des porte-cotons* 'cotton applicators' vs. *des porte-musique* 'music case', where plural marking of the two normally mass nouns *coton* and *musique* differs, and *des chefs-d'oeuvre*, where the head noun takes *s* even though it is used figuratively. Even more significantly, the rules correspond to nothing in the native speaker's intuition about spoken French, which rarely marks simple nouns for plural and never compound nouns.

An obvious parallel is the challenge of English spelling, which also reflects a mixture of factors: phonetic, morphophonemic, etymological, and analogical. This has long been a major concern of the psychology of language, and with the growing importance today of cognitive linguistics, few are the linguists who would deny that English spelling, with all its prescriptivist baggage, is a crucial object of study for us to understand how words are mentally processed. In both English and French, here is a significant effect of prescriptivism; to ignore its influence on how writers cope would be to miss a crucial factor underlying native speakers' linguistic behaviour.

2.1.2. SHIBBOLETH 2: PAST PARTICIPLE AGREEMENT. Let us now turn to what is an even more conspicuous instance of prescriptivism's influence: the agreement of the French past participle, henceforth PPA. This agreement is restricted to direct objects preceding the verb. The direct object can be a clitic, a relative clause antecedent, an interrogative, or an exclamation. Empiricist traditional grammars like Grevisse (1994) and Bescherelle (2006) label this phenomenon artificial because a) francophones must learn it in school, b) it is rarely audible, and c) its rules show the complexity which typically arises when grammarians try to improve their language. Historically, PPA is the creation of a sixteenth century poet, Clément Marot, who modeled it on Italian. Before Marot, the situation was helter-skelter: in Old French, the participle could agree or not, regardless of its position with respect to the verb. That is not to say that contemporary French has truly integrated the rule: a Google

search for *a fallus*, a string containing an agreement which is supposedly erroneous in any context, nevertheless produces nearly 1300 hits.

It is not surprising that francophones have difficulty mastering PPA. Its likely non-audibility is a factor, but not the most important one; after all, the plural *s* is normally silent too, but most francophones with average education master it with reasonable proficiency. The key reason for speakers' insecurity over PPA arguably lies in its Byzantine rules. An example in point is the different treatment mandated for causative *faire* versus verbs of perception followed by an infinitive. With causative *faire*, agreement is proscribed:

- (1) *Je les ai **fait** chanter.*
'I made them sing.'

while verbs of perception allow agreement only with a preceding direct object that is also the subject of the infinitive:

- (2) *Je les ai **entendus** chanter.*
'I heard them sing.'

If the object of the matrix perception verb is also the object of the infinitive, there is no agreement:

- (3) *Je les ai **entendu** prononcer.*
'I heard them pronounced.'

A recent spelling rule makes all PPs of perception verbs invariable before the infinitive, although the vast majority of authors have ignored it.

Reflexives, too, help complicate the picture. The cardinal principle is that only direct objects occasion agreement, but a sub-rule states that all reflexive clitics require it, unless they are indirect objects. Hence alternations like:

- (4) *Elle s'est promis de nous aider.*
'She promised herself to help us'. (Clitic is indirect object)
vs.
(5) *Elle s'est promise en mariage.*
'She betrothed herself'. (Clitic is direct object.)
vs.
(6) *Elle s'est évanouie.*
'She fainted.'

S'évanouir in (6) is an intrinsically reflexive, one-argument verb; the clitic cannot be a direct object, yet agreement is still mandatory. All such intricacies contrast with the straightforward rules for Italian reflexives discussed in section 2.1.2.2.

2.1.2.1. THE CHALLENGE FOR LINGUISTIC ANALYSIS. Given its special status as a shibboleth which any educated francophone is all too aware of, a linguist collecting data on PPA faces complications that are absent from phenomena like tense and aspect distinctions, which native speakers generally adhere to spontaneously.² The typical scenario is for an educated speaker to make agreement in writing, even if he has to consult a grammar for the more intricate cases, but to usually avoid it in speaking, unless he wants to impress with his school-grammar knowledge at, for instance, a job interview. Less educated speakers either avoid agreement when writing or tend to commit hypercorrection, making agreement where the rules forbid it. Most past particles have no phonetically distinct form for feminine and plural, so any study of oral data must be limited to about a dozen participles ending in *s* or *t* where these consonants would be audible for agreement with a feminine object.

It is risky, therefore, to approach PPA data as if it were a direct, faithful reflection of native speaker competence. A case in point is *permis*, the participle of *permettre* 'to allow'. This verb selects an experiencer realized as an indirect object and therefore not subject to agreement. Nonetheless, in the reflexive construction, well-educated female speakers will often say *Je me suis permise de* 'I have taken the liberty of', with the participle agreeing, audibly, with the pragmatically feminine *me*. A Google search brings up numerous 'improve your language' sites which condemn this usage, on the grounds that *me* is an indirect object, parallel to the non-reflexive *Je lui ai permis de* 'I allowed her to'. On the other hand, some school grammars like Parmentier 2004 treat it as an instance of an intrinsically reflexive construction, which requires agreement.

The fluctuation in both usage and grammatical judgments for *permis(e)* likely stems from a conflict between morphosyntax and semantics. Morphosyntactically, we see a parallelism between the reflexive *Je me suis permis de* and the non-reflexive *Je lui ai permis de*, where both *me* and *lui* instantiate indirect objects because they commute with full nouns which must co-occur with the preposition *à*. Semantically, though, the reflexive structure is not identical to its non-reflexive counterpart because the necessarily co-referential subject and clitic result in what García 1975 terms a meaning of 'double mention,' i.e. the verbal process involves only one participant and is therefore notionally distinct from the non-reflexive, where different entities take on the agentive and experiencer roles. The double mention sense applies to any reflexive structure, including intrinsic reflexives like *s'évanouir* 'to faint', which lack transitive analogues and which require PPA. (One indication for the semantic distinctness of the reflexive is that it often results in a different English translation, e.g. 'take the liberty' for *se permettre* and 'wonder' for *se demander*.)³ Given that syntactic and semantic arguments lead to different verdicts on agreement of *se permettre*, it is not surprising to see this lack of consensus among prescriptivists. Google data shows extreme variation in agreement for other past participles, but prescriptivists tend to concentrate on audible variation, hence the preoccupation with *permis(e)*.

Let us now look at a generative paper, Obenauer 1993, which claims that native francophones do have internalized knowledge about PPA, knowledge that is not just a superficial accretion of school-grammar rules. Obenauer claims that speakers make or avoid agreement according to an internalized [\pm specific] distinction for the antecedent object, and this syntactic contrast reflects native speaker intuition, devoid of prescriptive influence.

Lack of PPA can occur with either specific or non-specific objects, while PPA is possible only if the preceding object is specific.

Schematically, in spoken French:

–agreement → ±specific
+agreement → +specific

Conversely:

–specific → –agreement
+specific → ±agreement

We thus have two marked cases: lack of object specificity entails non-agreement, the corollary of which is that agreement entails object specificity. The other two starting points, non-agreement and specificity, are unmarked in their entailments.

For Obenauer, the specificity constraint is also to be found in non-standard resumptive pronoun usage, e.g.

- (7) *Combien de disques_i crois-tu qu'il va finir par les_i acheter?*
'How many records_i do you believe he'll end up buying them_i?'

where the clitic *les* can arise only if the records are a subset of a set already evoked in the context. Similarly, agreement in

- (8) *Je voudrais savoir combien de chaises cette usine a produites.*
'I would like to know how many chairs this factory has produced.'

would require that the chairs refer to a subset already established in the discourse. If the pragmatic focus is just on the quantifier, i.e. on the total number, agreement is precluded because of the non-specific status of the chairs. When the preceding object is to be interpreted non-literally or as part of an idiom, agreement is also claimed to be impossible, cf.

- (9) *Quand je pense à toutes les portes que je lui ai ouvert.*
'When I think of all the doors I've opened for him.'

where no agreement is allowed if the meaning is 'possibilities that I set up for him,' and

- (10) *la peine qu'il a pris pour nous mettre à l'aise...*
'the pains he took to put us at ease...'

Again, Obenauer attributes this non-agreement to the non-specific sense of the object.

Interrogatives too are said to display this constraint:

- (11) *Quelles maisons a-t-il construit(es)?*
 ‘Which houses did he build?’

would preclude agreement if the sense is non-specific, i.e. ‘what type of houses’, but if particular houses are to be identified, agreement is optional.

Agreement is claimed to be impossible with all exclamatory uses of *quel*. Obenauer ties this presumed fact to his specificity constraint by looking at the *which/what* contrast in several languages: this is supposedly an overt manifestation of \pm specific. In exclamatory contexts, French has only *quel*, which for Obenauer must be [-specific] as an exclamative, parallel to, e.g., English

- (12) *What (*Which) a pretty hat!*

That is the empirical basis for Obenauer’s analysis, which stems largely from Kayne 1989 and involves much theory-internal apparatus, including empty categories, chains, and constraints on movement between argument and non-argument positions. His analysis aims at a unified account taking in not only all noun-verb agreement, but also complex inversion. Since these facets are not relevant to our topic of prescriptivism, I will leave them aside to concentrate on Obenauer’s empirical assumptions.

My Google searches and consultation with native speakers revealed that only data with the quantifier *combien* come close to matching Obenauer’s grammaticality predictions: with all other syntactic contexts where the direct object is pre-posed, agreement is highly variable. For non-literal uses, most Google matches, e.g. with *prendre la peine* ‘take the trouble’ and *ouvrir les portes* ‘open doors’, show agreement. Admittedly, Google provides only written data, but the agreement variation encountered shows that Web data certainly do not represent a faithful application of PPA, and, to the contrary, often reflect the influence of spoken usage.

The problem is that Obenauer ignores the influence of school-grammar. At first glance, the *combien* data seem to bear out native-speaker knowledge of PPA that could not be due to prescriptivism, i.e. educated speakers have apparently mastered a distinction that goes beyond the official rules: they make agreement or avoid it, purportedly according to the \pm specific status of the preceding object. This behavior might reflect a genuinely internalized sub-rule to a general PPA rule that must have been learned in school. If so, Obenauer’s findings would give insight into how school-learned rules may interact with and even engender rules that are as spontaneously integrated as e.g. those involving tense and aspect. However, Obenauer’s claims for other structures are simply not borne out, and a plausible reason for the variability is imperfect learning of the school-taught PPA.

Taking a closer look at Google data, what can we infer from cases of PP agreement or non-agreement? There are four logical possibilities:

- a. PP agrees and this conforms to PPA, giving no evidence for internalized rule, i.e. could be due to conscious application of PPA;

- b. PP agrees and this violates PPA: reflects overgeneralization of PPA (PP agrees with object regardless of latter's position);
- c. PP doesn't agree and this conforms to PPA: same as (a);
- d. PP doesn't agree, in violation of PPA: this could be due simply to non-applicability of PPA, the norm in spoken French or a sub-rule application of [\pm specific] distinction.

Case d is the only one where we could be dealing with pure native speaker intuition, unaffected by the prescriptive PPA. My francophone colleagues indeed found that agreement sounded unnatural with [$-$ specific] objects, but only in quantification contexts, i.e. with *combien*. Obenauer's data for [$-$ specific] objects without PP agreement is limited to just such sentences with the quantifier *combien*. With other, non-quantified indefinite objects, e.g.

- (13) *Montre-moi des pièces que tu as écrit(es).*
'Show me the plays you've written'.
- (14) *Quelles voitures as-tu conduit(es)?*
'What cars have you driven?'

agreement may or may not occur in both oral French and in Google texts, so [\pm specific] is probably too general a feature to explain this internalized constraint on ppa.

For lack of agreement in quantification contexts, there is another explanation that does not rely on the [\pm specific] status of the object: *combien* is indeterminate for number and gender, and so resists agreement with the marked features 'plural' and 'feminine', cf. interrogative *qui* 'who', which requires singular verb agreement, even though pragmatically a plural antecedent is expected, e.g.

- (15) *—Qui a assisté à la fête?* 'Who attended the party?'
—Tous tes camarades. 'All your friends.'

Likewise, the demonstrative pronoun *ce* forces the unmarked ('masculine singular') form of an adjective predicate complement even if its antecedent is feminine:

- (16) *La pluie c'est déprimant.*
'The rain, it's depressing'.

Lack of agreement with *combien* phrases is not as categorical, though, because its complement can (must be, according to PPA) always be taken as the true object. Hence the variation evidenced from Google:

- (17) *Je me demande combien de chansons j'ai écoutées dans ma vie.*
'I wonder how many songs I've listened to in my life.'
vs.

- (18) *Je me demande combien de grammes de poisson j'ai mangé.*
'I wonder how many grams of fish I've eaten.'

Here the \pm count difference between *chansons* and *poisson* is a likely factor in the agreement difference. Pragmatically, the morphologically plural status of *grammes* is less important than the interpretation of *grammes de poisson* being a measure of weight, hence non-countable and not to be overtly marked as plural on the past participle. Specificity, i.e. whether or not songs or fish have been previously mentioned or are situationally evoked, is of no consequence.

Since agreement in the above two examples would be inaudible, I tested the following pair, where agreement would be heard, with native speaker colleagues:

- (19) *Combien de livres de morue as-tu pris(es)?*
'How many pounds of cod did you take?'
(20) *Combien de chansons as-tu écrit(es)?*
'How many songs have you written?'

One colleague said she sensed no difference in likelihood of oral agreement, while four felt that agreement sounded slightly more natural in the sentence with the countable *chansons*.

In sum, Google data and consultation with native speakers failed to confirm Obenauer's proposed distinction [\pm specific], notably in interrogative, relative and exclamatory contexts. Both Web data and native speaker judgments tended to support non-agreement with quantification *combien* along seemingly parallel lines to [\pm specific], although the unmarked status of the quantifier for number and gender is a likelier explanation for data lacking PPA.

2.1.2.2. COMPARISON WITH ITALIAN. The Byzantine picture of French PPA contrasts sharply with Italian, where agreement with a relative pronoun is now considered archaic. In modern spoken Italian, PPA is obligatory only with 3rd-person clitic direct objects. Agreement used to be mandatory for 1st and 2nd persons, but it is now optional. With reflexive verbs, agreement is always made with the subject:

- (21) *Si è lavata.*
'She washed herself'.
(22) *Si è lavata le mani.*
'She washed her hands.' (contrary to standard French *Elle s'est lavé les mains* and parallel to non-standard *Je me suis permise de...* 'I took the liberty of...')

The only exception is if there is an intervening direct object pronoun as in (23), where we see agreement with *le* rather than with the subject:

- (23) *Se le è lavate*
She washed them. (*Se* 'herself' is a dative.)

It is clear that, diachronically, PPA has been retreating. Yet it still reflects an authentically internalized, non-prescriptive rule in two circumstances: when the direct object is morphologically distinct from the dative, as with 3rd-person forms, and in reflexive contexts. Where there is both a reflexive structure and a 3rd-person direct object, the latter takes precedence for determining agreement.

It appears that non-prescriptive PPA in Italian is transparent, i.e. in all mandatory instances of PPA, there is an unequivocal marker for agreement. With 3rd-person non-reflexive clitics, the accusative is always distinct from the dative, as opposed to other persons, which have a single form *mi, ti* etc., for all non-subject cases. Reflexives too have an overt marker in the choice of auxiliary: *essere* 'to be' rather than *avere* 'to have'. Moreover, the agreement itself is always audible. French, in contrast, more often than not requires some conscious syntactic analysis to determine whether the agreement source is truly a direct object or, more accurately, not an indirect object. The transparency difference between French and Italian is a likely factor underlying the gulf between school learning of PPA in the former and its natural acquisition in the latter.

3. CONCLUSION. With both French PPA and compound noun plurals, there is variation in the degree to which the speaker follows prescriptivist rules. This is not simply a parallel of *who/whom* variation in English; the latter is largely predictable depending on register and a rather basic knowledge of sentence grammar, whereas the French shibboleths reflect far less patterned variation thanks to abstruse, at times arbitrary dictates and consequent native speaker uncertainty. Even language professionals must rely on reference tools when using plural noun compounds and every French writer knows to carefully proof his copy for past participle agreement, which has become the most infamous grammatical hoop facing every Francophone student.

In summary, here are some broader implications of prescriptivism's influence on linguistics. First, prescriptivism is not something that linguists should simply condemn in introductory linguistic classes and then dismiss. It involves the often intricate link between speech and writing: the latter is always to be acquired consciously, as descriptive knowledge, and practiced with at least a modicum of metalinguistic awareness. The result is frequently an amalgam of spontaneously acquired principles and school-grammar rules. For non-native speakers, this amalgam is even more apparent. As previously discussed, when teaching linguistics in and about language X to non-natives of that language, the instructor necessarily resorts to a prescriptivist approach because the students lack the intuition which allows natives to glean reliable insights about their own language. With core linguistic research too, prescriptivism is a factor that must be considered, as demonstrated with our two selected shibboleths, which are just the tip of the iceberg. Kibbee (2004), for instance, has found that French prescriptive grammarians, contrary to common belief, have not focused on just a handful of phenomena, but rather have set their sights on quite a range of deviations from the official norm. Such pronouncements have extremely varied effects, ranging from nil to substantive language change, as in the case of technical vocabulary in Quebec French.

Finally, the French preoccupation with prescribed language often goes beyond mere purism. A case in point are the lay postings on the 'français seulement' forum of the Wordreference list (<http://forum.wordreference.com/forumdisplay.php?f=46>). While some respondents showed the expected purism ('Just because speakers don't follow a rule doesn't mean we should abandon it'), others, likely non-linguists, made perceptive comments, e.g. that for *Pensez-vous que* 'Do you think that' + indicative/subjunctive, the choice of mood depends on how plausible the speaker considers the proposition of the complement to be. Contra those who equate prescriptivism with unreflecting prejudice, a serious examination of the French fixation on language shows that prescriptivism may at times engender insightful metalinguistic awareness.

- ¹ Joseph (2000) alludes to this gatekeeper effect in his assertion that arbitrariness of content is a defining feature of standard languages. It would be pointless for a standard language to codify something that everyone would do naturally, i.e. something having a basis in general cognition or universal experience.
- ² This difference between school-based and 'natural' mastery has long received the attention of 2nd-language acquisition specialists. For Krashen (1985), the distinction would be that of conscious *learning* vs *acquisition*, unreflecting internalization of linguistic principles. Anderson (1993) sees it as a distinction between *descriptive* and *procedural* knowledge: the former entails the ability to explain the skill while the latter implies simply mastery of it, without awareness. Krashen contends that learning and acquisition are unrelated, whereas Anderson claims that descriptive may lead to procedural knowledge via practice and then co-exist with it or disappear.
- ³ These arguments are a linguist's version of prescriptivists' reasoning. From the standpoint of the unreflective native speaker, who instinctively makes *permis* agree, the explanation is likely just one of analogy: since *me* is more often a direct than an indirect object, it is reinterpreted as a direct object with *se permettre*.

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COGNITIVE CONSTRAINTS ON THE USE OF TENSE FORMS IN JAPANESE NARRATIVES

SHOKO KOJIMA
Nihon University

TENSE ALTERNATION IN JAPANESE FIRST-PERSON NARRATIVES is superficially similar to the interaction between the ‘historical present’ (HP) and the simple past in narratives in English. The narrative in American English in (1) below is from the corpus in Wolfson (1982:30–31). Verbs in CAPITAL LETTERS indicate HP while those in **boldface** indicate the simple past.

- (1) Two years ago we **were** in Mexico, at Acapulco, and I **called** Mexico City and I **asked** for Juan. Now I’VE got to go through operators and I MAKE it person-to-person. And the maid TELLS the operator in Spanish and the operator TELLS me, ‘He’s not there.’ I **said**, ‘When will he be back?’, and the maid and the operator ARE having this great big conversation. I KEEP getting the same answer. And finally the operator SAYS to me, ‘He’s not here. He died. That’s — he’s not here. He died’. Well, I tell you, I **was** so upset. I **said**, ‘Thank you’, and I **hung** up.

The following narrative (2) from my corpus is an example containing tense alternation in Japanese. The past tense form *-ta* (verb ending) is an unmarked form to report past events and non-past tense form *-ru* or *-u* (verb ending) is a marked form to report past events. Verb endings in capital letter indicate non-past tense and those in boldface indicate the past:¹

- (2) a. *anoo boomu sutei-no otoosan ga pizza o katteki-ta-n-desu-yo*
well home stay-GEN host NOM pizza ACC buy-PAST-SE-POL-IP
‘Well, (my) home-stay host **bought** pizza.’
- b. *de otoosan ga kooyatte ake-mas-U*
then host NOM this way open-POL-NONPAST
‘Then, the host **OPENS** (the box of pizza) like this.’
- c. *kooyuubuuni ake-te*
this way open-CC
‘Opening (it) like this,’
- d. *omae peparoni-piza hoshii-ka to yu-U*
you pepperoni-pizza desire-NONPAST-QUE COM say-NONPAST
‘“Do you want (some) pepperoni pizza?” (he) SAYS.’

- (2) d. *de maa ... hoshii to it-ta-ra²*
 then um ... desire-NONPAST COM say-PAST-CON
 'Then, um ... (I) said "(I) want (some)," and'
- e. *nankakoo sagyooshi-te-RU-n-desu-yo*
 somehow operate-PRO-NONPAST-SE-POL-IP
 'somehow (he) IS operating (something).'
- f. *boku wa nan-da-roo t te omot-ta-n-desu-ne*
 I NOM what-COP-QUE COM think-PAST-SE-POL-IP
 'I **wondered** what.'
- g. *tara purein piza-no ueni sarami ga san-mai oitea-RU-n-desu-yo*
 then plain pizza-GEN on salami NOM three-slices exist-NONPAST-SE-POL-IP
 'Then, three slices of salami ARE on a (piece of) plain pizza.'
- h. *kekkyoku maa wakat-ta no wa yoosuruni*
 after all um find-PAST thing NOM in sum
 'What (I) **found**, um ... after all, **was**, in sum'
- i. *peparoni piza o ichimai dake katteki-te*
 pepperoni pizza ACC one-slice only buy-CC
 'only one slice (of the pie) (he) bought had pepperoni (on it).'
- j. *ato wa zenbu purein piza dat-ta-n-desu*
 rest NOM all plain pizza COP-PAST-SE-POL
 'the other pieces of pizza **were** all plain.'

As can be seen, the narrative begins with clauses in the past tense. The tenses are then variably alternated in the main story line and ultimately return to the past tense.

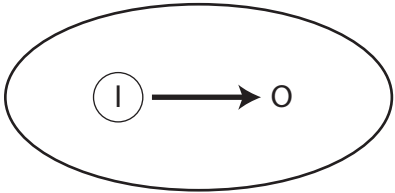
Two previous researchers (Iwasaki 1993, Takahashi 1996) explained this tense usage in first-person narratives by virtue of special effects such as vividness, reenactment or performance. However, there are some problems here. Iwasaki argues that the combination of the past tense form and first-person subjects in Japanese narratives is a canonical pattern, and thus that of the past tense form and third-person subjects creates a surprise effect, which in the terminology of narrative study might be interpreted as vividness. He also claims that the non-past tense form in Japanese is not equivalent to HP. Takahashi (1996) re-examined Iwasaki's data but came to the opposite conclusion: the circumstances in which Japanese speakers use the non-past tense form in narratives are very similar to those in which we find HP in English. She contends that the speaker recollects his or her experience when using the past tense, but reenacts it when using the non-past tense. As a result of this contradiction, I saw the need to collect and analyze my own data. This study is intended to improve on the explanation of the tense alternation phenomenon in spoken first-person narratives.

1. ANALYSIS OF FIRST-PERSON SUBJECT CLAUSES. I collected first-person narratives by recording spontaneous interviews. By spontaneous interviews I mean those conducted in a

	1st-person subject (1s)	3rd-person subject (3s)
PAST	112 (94%)	99 (49%)
NON-PAST	7 (6%)	101 (51%)
TOTAL	119 (100%)	200 (100%)

Table 1. Distribution of tense forms and subjects.

Egocentric Viewing Arrangement



- I = experiencer of the past events (protagonist) or narrator of the present moment
- O = object of consciousness in storytelling

Figure 1. Internal subjectivity (adapted from Langacker 1990:7).

relaxed atmosphere in which I encouraged the interviewees to narrate incidents from their past. A first-person narrative is one in which the narrator is the central actor or affected participant. Out of 63 narratives that I collected, 40 contain at least one non-past clause in the main story line. **Table 1** shows the distribution of tense forms and clause subjects. It clearly indicates that tense forms and clause subjects are interdependent and only interchangeable to a degree. 94% of all clauses with first-person subjects are expressed in the past tense. Clauses with first-person subjects in the non-past tense are rare at only 6%. In contrast, clauses with third-person subjects in the non-past tense appear at almost equal rates, 49% and 51%.

To explain the asymmetry in first-person subject clauses, I introduce a notion that I call INTERNAL SUBJECTIVITY, an application of the concept of subjectivity from Cognitive Grammar (Langacker 1988, 1990; Lakoff 1996), which is associated with ‘imagery’ (Langacker 1988:6) or a spatial configuration of perspective. Here, the locus of consciousness identifies with the subject of a particular clause, and the narrator or the speaker of the clause is one and the same individual. It is not clear whether the subject ‘I’ in a clause is to be identified with the ‘I’ experiencer of past events or the ‘I’ narrator of the present moment. Metaphorically, the present ‘I’ contains the past ‘I’ within it, so that a part of consciousness functions as the object of consciousness in storytelling. **Figure 1** represents an ‘egocentric viewing arrangement’ in which the speaker includes him- or herself in the construal of the scene (marked by the thick circle). I term this special kind of speaker perspective in first-person narratives INTERNAL SUBJECTIVITY. The speaker’s perspective is a fixed internal, rather than external, viewpoint.

As for the tense in Japanese narratives, we expect the default tense to be the past tense since narratives are past events. I claim that first-person subject clauses that use the default past

tense encode INTERNAL SUBJECTIVITY, which is implicit and presupposed for such narratives. Thus, the predominant number of first-person clauses would be in the past tense.

The question arises as to what kind of verbs can be used in non-past tense clauses on those rare occasions when they do occur with first-person subjects. There are only seven such tokens. These tokens can be categorized as either Type 1 or Type 2 as below.

Type 1: The speaker describes his or her actions or states with expressions that indicate his or her social identity. Examples are:

- (3) *yudayajin-no uchi kara ajiain-no boku ga nozoite-RU-wake-desu*
 Jewish-GEN home from Asian-GEN I NOM look out-PRO-NONPAST-SE-POL
 ‘From a Jewish home, I, an Asian, AM looking out (of the window).’
- (4) *maa kodomo des-U-kara ...*
 well child COP-POL-NONPAST-SO
 ‘Well, (I) AM a child, so...’

Type 2: The speaker describes his or her actions or states via metaphorical expressions. Two examples are:

- (5) *moo ui-te-RU-n-desu-ne kocchi-wa*
 EXC float-PRO-NONPAST-SE-POL-IP this side-TOP
 (Lit. ‘(I) AM floating, as for this side.’)
 ‘I AM beside myself.’
- (6) *moo katamat-te-RU-no*
 EXC be hard-PRO-NONPAST-SE
 (Lit. ‘(I) AM hardened.’)
 ‘I AM beside myself.’

All examples of this type are idiomatic expressions meaning that the speaker is ‘beside him- or herself’ with fear. Intuitively, all these clauses sound a little odd. Borrowing Kuroda’s phrase (1973), they imply a ‘split ego’—one is simultaneously the subject of his or her own experience and also the observer of the event, that is, a third person. They are objective from the speaker’s point of view because the speaker expresses his or her own action as if he or she were a third person.

To explain the types presented above, I draw from Lakoff’s concept (1996) of Subject and Self in his ‘metaphor systems of conceptualizing the self’. Lakoff suggests that a person can be conceptualized as split in two parts, with a Subject and a Self. The Subject is the locus of subjectivity and consciousness, including emotionality, judgment, and will. The Self is the body, but also more than just that. Its properties are physical characteristics, name, social role, religious affiliation and so on. These two parts are thus effectively two persons inhabiting the same body. According to Lakoff, in metaphorical expressions we reason and

talk about these internal divisions, although a system of divisions does not fit into a simple general scheme. The divided parts of a person are reflected in many metaphorical expressions. Consider sentence (7):

(7) *You need to step outside yourself.* (Lakoff 1996:99)

Lakoff states with respect to this sentence:

A friend may tell you to take a look at yourself, that you may look very different from outside than from inside. It is the external viewpoint, from which you see yourself as others see you, that is taken to be the objective viewpoint. Every time we try to see ourselves as others see us, we are conceptualizing ourselves as split in two, as if we were made up of an ensemble of at least two parts. There is a locus of consciousness and rationality, the center of all subjective experience—the Subject. The Subject normally resides inside the other half of us—the Self. The Self includes at the very least our bodies, our emotions, and that part of us that acts in the world.

When you step outside yourself and look at yourself, what might you see? You might see, for example, that you are selfish, that you are acting to satisfy your needs and desires rather than the needs and desires of others. But who is doing this seeing? You are, of course. You, the Subject, the locus of consciousness, rationality, and judgment, are looking at your Self, the locus of your needs, desires, and passions. (*ibid*:101–2)

Quoting the sentence, ‘I’m beside myself’, Lakoff further states that the Subject is normally supposed to be in a bounded region, but that it is outside because of a lack of Self-control. This metaphor reflects our understanding that the internal structure of a person is associated with a normal state or location of the Subject in spatial domain.

Returning to the examples of first-person subject clauses in the non-past tense in my data, Type 1 indicates a speaker viewing him- or herself as a Self that embodies some social role. In sentence (3) ‘From a Jewish home, I, an Asian am looking out of the window’, the Self as an Asian is expressed. In sentence (4) ‘I am a child, so...’, the speaker, now a writer, talks about his childhood. He expresses his state (being a child) from the point of view of an adult. In Type 2, both sentences are metaphors connoting ‘beside oneself due to fear’. The expression *ui-te-ru-n-desu-ne* in sentence (5) literally means ‘I am floating’ in Japanese. Sentence (6) *katamat-te-ru-no* literally means ‘I am hardened’. The idea here is that the speaker typically views himself as the Subject or the center of his consciousness, in control of the Self. The normal metaphorical location of the Subject would usually be on the ground, not floating or above the ground. Here, the Subject is indeed ‘above the ground’. Thus, this expression connotes ‘I am beside myself’. As for sentence (6), literally meaning ‘I am hardened’, one must bear in mind that the normal metaphorical state of the Subject is not hard. Hence, this expression would also translate as ‘I am beside myself’. Both of these metaphorical expressions therefore indicate that the speaker views himself as a Self quite distinct from the Subject due to a lack of conscious Self-control.

PAST		NON-PAST	
Orientation	38 (30%)	Orientation	14 (10%)
Complication	46 (35%)	Complication	121 (90%)
Resolution	46 (35%)		
Total	130 (100%)	Total	135 (100%)

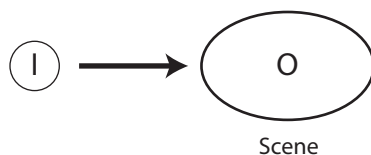
Table 2. *Distribution of the circumstances of tenses in third-person subject clauses.*³

To summarize, the speaker steps outside his or her ordinary perspective when describing his or her own actions or states in this way. But as Lakoff states, ‘[o]ne is normally subjective, and being objective takes more effort and more control than being subjective’ (*ibid*:103). Thus, the occurrence of first-person subject clauses in the non-past tense is rare because there is a conflict between INTERNAL SUBJECTIVITY and non-past tense marking. To conclude this section, there is a linguistic regularity with regard to the choice of tenses in first-person clauses in Japanese.

2. ANALYSIS OF THIRD-PERSON SUBJECT CLAUSES. As seen in **Table 1**, third-person subject clauses are distributed at a nearly even rate. This is problematic in that, unlike the case of first-person subject clauses, it is difficult to immediately determine whether this variation exhibits any regularity. Thus, I will begin by analyzing the internal structure of all the third-person subject clauses.

As seen in **Table 2**, the non-past tense is effectively restricted to occurrences in the Complication, or main story line, where ‘tense is freed from its main job of providing a reference time, events can be understood as having occurred prior to the moment of speaking, with or without the past tense form’ (Schiffrin 1981:51). On the other hand, past tense clauses are distributed evenly through the Orientation, Complication, and Resolution. The verbs occurring here in the Complication are typically punctual in aspect. The storyteller presents referential information in the Orientation and answers the question ‘So what happened finally?’ in the Resolution. In the Complication, each past tense depicts an external description of past happenings in chronological order. On the other hand, non-past tense clauses are found mainly in the Complication, or main story line. They are negatives, adjectival predicates, statives, progressives, and quotative verbs. The content of these clauses goes beyond the normative narrative sequence of referential information and conveys the speaker’s attitude and feelings towards narrative events. To explain this phenomenon, I propose the notion of EXTERNAL SUBJECTIVITY, represented in **Figure 2**. This is the contrastive notion of INTERNAL SUBJECTIVITY.

Third-person subject clauses in first-person narratives are ambiguously subjective regardless of tense in that they could be expressing the consciousness of the narrator ‘I’ or the experiencer ‘I’ or both. But the difference between first-person and third-person subject clauses is that the speaker’s descriptions in third-person subject clauses are based on his or her observations, rather than his or her own past actions or states. A third-person represents the object spoken about, whether animate or inanimate. Here, the vantage point of the speaker is distinct from the object depicted by the speaker, and the locus of conscious-



- I = experiencer of the past events (protagonist) or narrator of the present moment
 O = object of consciousness in storytelling

Figure 2. *External subjectivity (adapted from Langacker 1990:7).*

ness in the clause is separate from the speaker. First, the default deictic center of the speaker for describing third-person subject clauses is one that is separate from the object in the utterance. Second, the default tense for reporting past events is past. I posit that third-person subject clauses that use the default past tense encode EXTERNAL SUBJECTIVITY. It is asymmetrical to INTERNAL SUBJECTIVITY in first-person subject clauses in the past tense, indicating that the speaker distinguishes between knowledge that he or she has acquired from direct first-hand experience, that is, his or her own actions or states and knowledge that he or she obtained through observation. While there is a conflict between INTERNAL SUBJECTIVITY and non-past tense marking with respect to first-person subject clauses, it is relatively easy for the speaker to shift his or her perspective in third-person subject clauses. Here, the speaker's assessment of information is more involved than in the case in first-person subject clauses. In this case, the shift of the perspective indicates that it depends more on the speaker's assessment towards the information in narratives than in the case with INTERNAL SUBJECTIVITY.

3. CONCLUSION. An analysis of my own data has yielded results similar to those found by Iwasaki (1993). The distribution clearly indicates that tense forms and clause subjects are interdependent and only interchangeable to a degree. However, Iwasaki does not fully account for the combination of the non-past and first-person subjects, or that of the non-past and third-person subjects. His theory is based on the notion of transitivity. I argue that transitivity in grammar cannot fully explain the tense alternation phenomenon. Instead, my study looks at subjectivity, which in a cognitive linguistics framework is regarded as imagery or the spatial configuration of perspective. I view the choice of tense forms and clause subjects as the effects of subjectivity, which is what indicates the speaker's epistemological stance towards the world. I conclude that while the use of tense in first-person subject clauses is largely restricted for cognitive reasons, the use of tense in third-person subject clauses reflects varying narrative strategies that the speaker may employ, which include his or her own evaluation. Ultimately, the production of the narrative involves the reconstruction of past experience more than recall.

¹ The following abbreviations are used in glosses:

ACC	accusative	NOM	nominative
CC	clause-chaining	NONPAST	non-past tense
COM	complimentizer	PAST	past tense

CON	conjunction	POL	politeness
COP	copula	PRO	progressive aspect
EXC	exclamatory expression	QUE	interrogative
GEN	genitive	SE	sentence extension word
IP	interactional particle	TOP	topicalizer particle

- ² The *ta* form here is a special fixed usage with a conjunction particle *-na*, which is used as a device for linking clauses that indicate temporally-ordered events.
- ³ Since Japanese narratives contain chained nonfinite clauses, the number of tokens here is relatively small (265 tokens altogether).

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THE STRUCTURE OF INFORMATION IN EXPOSITORY DISCOURSE

ROBERT E. LONGACRE

The University of Texas at Arlington/ SIL International

AS ORIGINALLY CONCEIVED, this paper was intended to describe the structure of a medical discourse: 'Amyloid Plaques and Neurofibrillary Tangles in Alzheimer disease' (see the Appendix). I offer the present paper, however, with a view towards a wider application of analysis of this sort to expository discourse in general.

1. CHARACTERIZATION OF EXPOSITORY DISCOURSE. Broadly speaking, expository discourse transmits information of a non-narrative sort by such statements as $A=B$, $A \rightarrow B$, $A \wedge B$, or A is constituted of B ; i.e., A equals B , A implies B , A is associated with B , or A is constituted of B . Further relations such as A happens under certain B conditions are also encountered. All such relations invite some sort of tabulation. The tabulation employed here is a loose application of what Zellig Harris suggested and implemented in the 1950s onward and coming to full fruition in the late 1980s before his death. Harris insisted that the structure of such a tabulation was in itself indicative of *the information content of the discourse being analyzed*. While this is a strong claim, its general plausibility seems supportable by such analyses as that presented in this article. This article also suggests that the malleability of a discourse to this sort of tabular representation is a hallmark of expository discourse.

2. THE TEXT TO BE ANALYZED. The full text of the medical article on which this paper is based is given in the Appendix; I have numbered the sentences for ease of cross-reference. Essentially the article introduces the reader to amyloid plaques (AP) and neurofibrillary tangles (NT) as abnormalities found in the brains of people with Alzheimer Disease (AD). The article mentions that researchers, beginning with Alois Alzheimer, have studied these structural abnormalities by autopsying the brains of people who displayed behavioral symptoms of the disease. The article also mentions the areas of the brain, the hippocampus and the entorhinal cortex, that are especially associated with memory and which are the first areas to be affected by the disease and which are most thoroughly affected. Then the article, reverting to the perspective of the researcher, mentions that the correlation between the presence of AP and NT in the brain and the symptoms of Alzheimer Disease is only approximate. This is because, although AP and NT are present and dense in the brains of people with AD, they are also found in people who either have other mental impairments or have no behavioral symptoms at all.

3. TABULATION OF THE INFORMATION IN THE TEXT. All of this invites a three-fold tabulation of the information found in the discourse.

3.1. FIRST TABULATION. The first tabulation involves three columns with ‘researchers’/‘investigators’/‘scientists’ (and of course ‘Alois Alzheimer’) in the first column; such verbs as ‘report’/‘find’/‘concentrate p(attention on)’ in the second column, and AP/NT and the like in a third column. I tabulate these elements here similarly to what is found in the abstract as O (with O for a putative generic verb ‘observe’). Sentence 1 has been grammatically transformed from passive to active to accommodate it within the tabulation; such a transformation is given in quotations to distinguish it from the unmodified text:¹

	R	O	X [where X= brain abnormalities and X ₁ = AP, and X ₂ =NT
1a.	‘We	know much	about AD
1b. because	researchers	have studied	human brains obtained during autopsies’
2. In 1907,	neurologist Alois A.	reported	damaged nerve cells and other abnormalities in the brain of a woman who displayed progressive behavioral and intellectual disturbances before her death.
3. Since this report,	researchers	have sought to define	the role that these that these abnormalities play....
4a. Although	research	has not yet shown	that AP and NT cause cognitive impairment in people with AD
4b.	the study of these abnormalities	may one day lead to	better treatments for the disease.
10a. However	researchers	consistently find	extensive plaques formations in certain brain areas.....in AD
10b. but	[researchers]	[do] not [find]	[extensive plaques] in people with other brain diseases.
15.	Mice genetically engineered to develop a high density of plaques...	show	memory deficits similar in people with AD.
20b. but	some scientists	believe	X ₂ → FB [see second tabulation], i.e., tangles hold the key to the primary cause of the disease
27.	‘researchers	observe ²	AD in a person’s behavior when X ₂ tangles begin to appear in the cerebral cortex’

	R	O	X [where X= brain abnormalities and X₁ = AP, and X₂ =NT
14c.	many inves- tigators	have con- centrated their atten- tion on determining	how plaques form and how to prevent them.
16.	Researchers	have devel- oped	a vaccine... [see second tabulation]

Several comments are in order regarding the above tabulation: (1) In the first column there seems to be no problem in roughly equating 'neurologist Alois Alzheimer', 'researchers', 'research', 'the study of these abnormalities', and 'some scientists'. Sentence 6 can be taken to indicate a particular type of research. Sentence 27 presents more of a problem but 'AD becomes apparent' is still from the viewpoint of the research-observer. It is here transformed and paraphrased to 'researchers observe AD in a person's...' In sentence 15 'genetically engineered mice' takes the place of the researcher. (2) The verbs in the center column exhibit a general semantic similarity. (3) The more diffuse material in the third column can all be summarized as X, brain abnormalities and Y, behavioral and cognitive impairment. In two instances, 20 and 27, an XFB array is embedded in the third column. (4) Sentence 16 presents us with a vaccine which can be considered to be a negative value of the references to AD, and to the symptoms of AD as well as to the references to plaques and neurofibrillary tangles in column 3. In tabulating this sentence, 'Researchers' goes in column one, and 'have developed' in column 2 with 'vaccine' now finding its place in column 3. But the rest of the material which qualifies 'vaccine' is put not in column three but is charted in the second table. Actually, while 'vaccine' as a remedy for AD can be considered to be a negation of AD, it is developed somewhat differently in the second tabulation.

3.2. SECOND TABULATION. A second tabulation is one which puts X in the first column, 'form'/'spread to' etc. in the second column, and location of the abnormality in the third column. 'vaccine' fits in here as (hopefully) the negation of 'plaques'.

	X	F	B
6a.	Amyloid plaques	are composed of	abnormal proteins
6b.	[abnormal pro- teins]	surrounded by	a layer of damaged nerve cell frag- ments.
7.	these clusters	form	in the spaces between nerve cells
11a. Although	the density and distribution of plaques	varies	in the brains of people with AD

	X	F	B
11b.	plaques	generally form first	in the entorhinal cortex...
12a. As	AD	progresses	
12b.	plaques	begin to form	in the hippocampus an S-shaped structure, that is seated, deep in the middle of the brain adjacent to the entorhinal cortex
13. Later,	plaques	spread to	the temporal, parietal and frontal cortices.
14a. Because	extensive plaque formations	are characteristic	of AD,
14b. and because	they	form before	the accumulations of tangles.
20a.	Tangles	form later	
than	plaques	[form]	in the disease.
16b.	A vaccine	that reduces	the number of plaques in the brains of these mice
16c.	[a vaccine]	by stimulating the immune system	to eliminate the proteins that form plaques.
17. Whether... is unknown.	such a vaccine	would prevent	AD or improve memory in people with AD

[Some scientists believe that]

20c.	tangles	hold the key	to the primary cause of the disease.
21.	The density and distribution of tangles in the brain	tend to follow a fixed pattern	with little variation among people with AD.
22.	Tangles	are formed	from the collapse of brain cell microtubules
23. Overall,	the density of tangles in the brain	tends to correlate directly with	the severity of the dementia.
24. but	tangles	are found	in the brains of people with other neurological diseases

	X	F	B
25a. Like plaques,	tangles	can be found	in the brains of people without cognitive impairment.
25b. particularly	[tangles	can be found]	in the hippocampus and entorhinal cortex.
26a.	A high density of tangles in these areas	does not prove	that a person has AD
26b. although	[that] they	occur	this is the first place [<i>cf. columns 2 and 3</i>] in the development of AD
27b. when	tangles	begin to appear	in the cerebral cortex
28. At this point	tangles	form	in the inferior temporal cortex, an area of the cerebral cortex near the hippocampus and the entorhinal cortex.
29. In more advanced stages of AD	tangles	begin to appear	in other areas the cerebral cortex.

The above tabulation is lengthier than the first but perhaps more straightforward. 'Plaques' and 'tangles' occur in the first column, or some semantic elaboration of them: 'these clusters', 'extensive plaque formation'. 'Tangles' occurs in identical contexts (e.g., with the verb 'form'), with 'plaques' but this is elaborated to 'the density of tangles' and the density and distribution of tangles, and 'a high density of tangles'. The verbs in the center column include 'form', 'are composed of', 'appear' 'occur', 'can be found' and the like. But in several instances this reporting stance gives way to metalanguage: 'hold the key', 'tends to correlate with', and 'does not prove'. Sentence 20 is especially crucial in relating the first tabulation to the second. The items in the third column are mainly locative. A medical research problem is indicated here in 22 to 25 above, where it is stated that tangles as well as plaques can occur in the brains of people either those with other neurological diseases than AD or with no cognitive impairment—even though the entorhinal cortex and the hippocampus are heavily affected. The information about a possible vaccine in 16 and 17 is absorbed into this tabulation but is tentative (note the modals in 17) both structurally and on the research front. Here again the text structure mirrors the reality being described.

3.3. THIRD TABULATION. Still a third tabulation is needed to capture the association of certain areas of the brain with memory. I label the three columns H, ^, and M.

	H	^	M
11.	the entorhinal cortex, an area	known	for its involvement in memory
12.	the hippocampus, an S-shaped structure that is seated deep in the middle of the brain adjacent to the entorhinal cortex	is also known	for its important role in memory

I do not believe that this third tabulation needs comment.

4. THE STRUCTURE AND MEANING OF THE TEXT can now be seen and summarized as follows:

R O X/Y
Researchers observe X
Researchers observe Y
Researchers observe XFB
Researchers try to correlate X, Y, and XFB

The crux of the matter is seen in a summary of the second and third tabulation:

	X	F	B
	X ₁ Plaques	form	in brains of people with AD
	X ₂ Tangles	form	in brains of people with AD
	X (AP's and NT's)	become dense	in brains of people with AD.
	X (AP and NT)	first effect	H, i.e., entorhinal cortex and hippocampus

	[H	^	Memory]
--	----	---	---------

	X	F	B
But	X	may form	in brains of people with other neurological diseases
And	X	may form	in brains of people without Y, i.e., without cognitive impairment.

This makes inevitable the conclusion:

∴ **Researchers (approximately) correlate X with Y.**

5. CONCLUSION. The above tabulation may possibly indicate a template for such discourses as this: (1) Researchers observe one set of phenomena; (2) researchers observe a second set of phenomena; (3) researchers have reason to try to correlate the two; (4) on studying

the phenomena in detail, the attempted correlation proves to be only approximate but the attempted correlation is instructive.

In turn, however, this template is similar to the Hoey (1983) scheme: Situation, Problem, Solution, Evaluation. In fact, the ad hoc template suggested here may simply be a variant of the more inclusive Hoey template.

I reiterate here my suggestion that the malleability of expository discourse to such tabulation as here illustrated may in itself be a characteristic of this discourse type. Expository discourse is static and invites a flat tabulation or even a more advanced tabulation in more than two dimensions. In this respect it presents a contrast to the dynamism of narrative.

In formulating the information content of the medical discourse here analyzed, a loose application has been made of 'discourse analysis' as practiced by my beloved teacher, the late Zellig Harris, from the 1950s onward. This article is also meant to suggest the possibility of accommodating Harris' 'discourse analysis' into a discourse-typological framework in which expository discourse with its malleability to tabulation takes its place with other discourse types which do not so markedly display this characteristic. For example, narrative discourse has a vertical storyline defined by chronological sequence which clearly sets it apart from exposition. Harris in his time applied his type of analysis to narrative in earlier applications of it (Harris 1963), but in studies which spanned the last several decades of his life (cf. Harris *et al.* 1989), he devoted himself to the analysis of texts more of the sort here considered, i.e., scientific-expository texts.

¹ Zellig Harris's methodology of 'Discourse Analysis', which this article implements, makes use of grammatical transformations, such as passive to active, whenever they are needed to develop parallelisms within the text being analyzed. In effect, this methodology reduces grammar to a minimum so that lexical structures can better be seen.

² Here again a grammatical transformation proves strategic: 'Alzheimer's disease becomes apparent in a person's behavior' is transformed to 'Researchers observe AD in a person's behavior'.

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APPENDIX

'Amyloid Plaques and Neurofibrillary Tangles in Alzheimer Disease', by Simon Margolis and Peter Rabins. In *Memory 2002: The John Hopkins White Papers*, p. 3. Baltimore: The John Hopkins Medical Institutions. (Included by permission of John Hopkins University Health Publishing/Medletter Associates, Inc.)

(Sentences of the text are numbered for ease of reference.)

[1] Much of what we know about Alzheimer disease (AD) stems directly from studies of human brains obtained during autopsies. [2] In 1907, neurologist Alois Alzheimer first reported the presence of damaged nerve cells and other abnormalities in the brain of a woman who displayed progressive behavioral and intellectual disturbances before her death. [3] Since this report, researchers have sought to define the exact role that these abnormalities—called amyloid plaques and neurofibrillary tangles—play in the development and progression of AD. [4] Although research has not yet shown that plaques and tangles cause cognitive impairment in people with AD, the study of these abnormalities may one day lead to new treatments for the disease.

[5] Amyloid Plaques

[6] Amyloid plaques are composed of abnormal proteins surrounded by a layer of damaged nerve cell fragments. [7] Also called senile plaques, these clusters form in the spaces between nerve cells. [8] Exactly how they affect nerve-cell function is unclear. [9] At autopsy, the brains of most older people—even those without cognitive decline—show accumulations of amyloid plaques. [10] However, researchers consistently find extensive plaque formations in certain brain areas (specifically the cerebral cortex and hippocampus) in AD but not in people with other brain diseases.

[11] Although the density and distribution of plaques varies in the brains of people with AD, plaques generally form first in the entorhinal cortex, an area known for its involvement in memory. [12] As AD progresses, plaques begin to form in the hippocampus, an S-shaped structure that is seated deep in the middle of the brain adjacent to the entorhinal cortex and is also known for its important role in memory. [13] Later, plaques spread to the temporal, parietal, and frontal cortices.

[14] Because extensive plaque formations are characteristic of AD, and because they form before the accumulations of tangles, many investigators have concentrated their attention on determining how plaques form and how to prevent them. [15] Mice genetically engineered to develop a high density of plaques (but not tangles) show memory deficits similar to those in people with AD. [16] Researchers have developed a vaccine that reduces the number of plaques, in the brains of these mice by stimulating the immune system to eliminate the proteins that form plaques. [17] Whether such a vaccine would prevent AD or improve memory in people with AD is unknown. [18] (For more information on the Alzheimer vaccine, see the feature on pages 20–[21])

[19] Neurofibrillary Tangles

[20] Tangles form later than plaques in the disease, but some scientists believe that tangles hold the key to the primary cause of AD. [21] The density and distribution of tangles in the brain tend to follow a fixed pattern with little variation among people with AD.

[22] Tangles are formed from the collapse of brain cell microtubules (an internal structure that helps transport substances within the cell). [23] Overall, the density of tangles in the brain tends to correlate directly with the severity of dementia, [24] but tangles are found in the brains of some people with other neurological diseases.

[25] Like plaques, tangles can be found in the brains of people without cognitive impairment, particularly in the hippocampus and entorhinal cortex. [26] A high density of tangles in these areas does not prove that a person has AD, although this is the first place they occur as AD develops.

[27] Alzheimer disease becomes apparent in a person's behavior when tangles begin to appear in the cerebral cortex. [28] At this point, tangles form in the inferior temporal cortex, an area of the cerebral cortex near the hippocampus and entorhinal cortex. [29] In more advanced stages of AD, tangles begin to appear in other areas of the cerebral cortex. [30] The dots in the illustration above depict the location and density of both amyloid plaques and neurofibrillary tangles in the advanced stages of AD.



LINGUISTICS AND COGNITIVE NEUROSCIENCE: FRIENDS, FOES, OR DISTANT ACQUAINTANCES?

ALEXANDRE SÉVIGNY & KARIN R. HUMPHREYS
McMaster University

THE 1960S SAW THE RISE of the generativist program, which, in the realm of Anglo-American linguistics, helped linguistics emerge as an independent discipline, and placed it at the centre of social scientific research for several decades, playing a central role in what is known as the cognitive revolution in psychology and other social sciences. Of course, fifty years earlier in Europe a very similar program of research had emerged from the work of the Swiss linguist Ferdinand de Saussure (Saussure 1916). One of the central tenets of the cognitive revolution was that mental representations are a proper object of scientific study, and that behaviors such as language cannot be adequately described without recourse to them. Constant progress ensued in the discipline as a whole with new research being built upon older results, both theoretical and empirical. It is generally accepted that the cumulative nature of such progress may be considered the mark of a mature discipline. However, we will argue there has been a significant plateau in the ability for linguistics to function as a cumulative science, especially in the domain of syntactic theory. Moreover, starting in the mid-80s, linguistics has seen a steep decline in both enrollments and tenure-stream appointments. This has coincided with the marginalization of theoretical linguistics within the more general field of cognitive science, including cognitive neuroscience (Jackendoff 2002: xiii).

Cognitive neuroscience has also been at the forefront of a more recent scientific revolution, although this was driven more by technological advances than by changes in the underlying metaphor of cognition. Fast, inexpensive, and accessible computational power has made brain imaging feasible for a wider range of researchers, including linguists. The interest that cognitive neuroscience has generated is tremendous, and, because of this interest, cognitive neuroscience is frequently viewed as a way of incorporating empirical methods into the behavioral sciences. A linking of mental processes to neural substrate allows for what seems to be a unification of mind and brain, long separated since Descartes. Of still greater interest, cognitive neuroscience is often taken as a way to reify these mental processes. Previous abstract models of cognition are now theoretically poised to be brought into full view by obtaining physiological evidence through techniques such as fMRI. The underlying assumption is that the mental representations that became an object of study in the cognitive revolution are realized somehow in the brain. This mapping is far from straightforward, but, we assert, nonetheless real. In this paper, we will examine several potentially promising relationships between current trends in recent linguistics and cognitive neuroscience, some of the assumptions underlying each discipline, and how each domain can inform the other in their inevitable and impending interactions.

1. WHAT DO LINGUISTS AND COGNITIVE NEUROSCIENTISTS WANT TO KNOW? In an examination of the applicability of cognitive neuroscience to linguistics, the most important question must be this: What are the questions that linguistics wishes to ask, and what are the problems it wishes to solve? The same question must then be asked of cognitive neuroscience. Too often the disciplines are defined by idiosyncratic methodology, or worse, dogmatic beliefs and accompanying embittered squabbles over intellectual turf.

What are the fundamental aims of linguistic inquiry? For this paper, we will restrict our discussion to theoretical linguistics, and leave, for example, sociolinguistics, historical linguistics, and discourse analysis aside, given that they do not define themselves as explicitly cognitivist. Notably, these fields are all empirically oriented, and a very good argument can be made that there is ongoing cumulative progress being made in these fields. We do not pretend to lay out a prescriptive research program for scientists of language. Rather, we wish to seriously raise the question: What *do* linguists want to know? Answers to this might include, but are certainly not limited to:

1. What are the representational elements that comprise a native speaker's knowledge of language?
2. What are the rules or regularities that govern the combination of these representational elements?
3. Is there a link between the idealized representations, expressed algorithmically, and the implementation of those representations in the brain?

On the other hand, what do cognitive neuroscientists wish to know? There are two major approaches here. The first centres on how cognitive representations and processes (including language) are realized in the brain. That is, the basic questions are about the brain. This includes where in the brain various functions occur (localization), and how they occur. A great deal of progress has been made on the former, and rather less on the latter. The second major approach can be seen as the converse of the first, in that it asks what can studying the brain tell us about cognitive representations and processes. That is, the basic questions are not about the brain itself, but are at a more abstract, cognitive level. This is in line with the goals of cognitive psychology: to acquire understanding (a) deductively, by basing these deductions on experimental data obtained from observing brain activities and (b) inductively, from forming hypotheses, which are then tested for their yield.

In terms of linguistics research, the first (brain-centric) approach asks, for example, where in the brain a certain linguistic process takes place, the answer to which is valuable in its own right. However, not stemming from a process-centered approach, such information has limited value in what it can tell us about underlying processes at a cognitive level. It cannot tell us what that process does; given a particular input, what the output of that function should or could be. It is possible that eventually this may be achievable, and that we will come to understand a simple cognitive process by an inspection of the underlying neurophysiology. However, for the present it is crucial to understand that the state of neuroscience is nowhere close to realizing that ability. This is akin to trying to understand cell division by studying the subatomic physics of the process. The grain of analysis being

applied by the two disciplines is simply not comparable, and research along these lines is likely to be less than fruitful. It is not only a level-of-abstraction issue; it is a qualitative difference in the observables that needs to be bridged. To unify linguistics and cognitive neuroscience, it is necessary to go from a physiological description to a more functional description. This is akin to trying to reconcile classical with quantum mechanics where the phenomena are so different they are described as quantities in one and as probabilities in the other. This is not a difference of representational level, but a genuine qualitative difference in the observables that requires different languages to describe.

On the other hand, the second approach—using neuroscientific techniques not to understand the brain *per se*, but rather to better understand cognitive processes—holds considerably more promise for linguistics. For example, if one were interested in knowing whether certain representations were distinct or not (e.g., syntax and semantics), one could create an experiment that showed a corresponding dissociation in the brain in terms of localization or timing. While not definitive, showing this kind of dissociation does argue for positing a distinction in linguistic theory. However, not being able to demonstrate such a dissociation probably would not constitute particularly convincing evidence one way or the other.

The goal of much theoretical linguistics seems to be to determine the formal mathematical functions that underlie language. The core assumption is that there exists a generic system, a set of platonic forms that constitute linguistic competence. How these functions are actually implemented—that is to say, in terms of processes underlying performance—is irrelevant to this goal. A function may be realized by a number of very different algorithms, none of which has any claim to being more correct, as long as all one cares about is whether it computes the function correctly for all possible inputs. However, this can leave us with no reliable, measurable, consistent way of choosing among theoretical alternative descriptions of the same function. Unless those descriptions are grounded in some external reality, linguistic research risks becoming theory-internal with no way of determining the correct alternative to choose or to prefer as more promising. Even if one ultimately is not primarily concerned with how the brain processes language activities, there are several reasons why cognitive psychology and cognitive neuroscience can form a crucial part of that grounding reality. For example, one might also be interested in determining the algorithm that is actually used to compute a function. These algorithms should then be described in cognitive terms, ultimately realizable in the brain. That is, the processing is the algorithm, as implemented in the brain. Note that an algorithm does not necessarily compute a formal function. An algorithm can also be non-deterministic, and represent heuristic use. A function, on the other hand, is always deterministic.

To begin with, we introduce three major problems with limiting theoretical linguistics as a hunt for a list of mathematical functions, while ignoring algorithmic (i.e. processing) issues. The first was alluded to above, where linguistic theories can become wars of competing formalisms, without means of empirical falsification. The next is even more fundamental: Is language even capable of being described in terms of functions? This would seem to lend itself to a jigsaw puzzle version of language cognition—that is, an ideal abstract system whose pieces always fit together in just the right way, without regard to real-time processing constraints and considerations nor pragmatics of context. However, if language is not in

fact a set of formal functions, then treating its study as such becomes a fatally flawed exercise. Whether or not language reduces to a set of formal functions should be an empirical question for linguists, rather than a tenet of faith from which all linguistic inquiry stems. Moreover, it seems a particularly unsatisfactory solution to deal with this question by defining linguistics to include only that which is describable in this way (cf. the distinction between competence and performance). The third problem with ignoring the underlying algorithms is a more practical point. It is quite helpful to be able to use all the data at hand in order to solve the problem, including information about algorithms and their implementation. Linguists using cognitive neuroscientific methods would study the implementation of algorithms, with the aim of reverse-engineering a representation, or model, of those algorithms which has a relationship with human language processing. In practical terms, this is a complex bootstrapping problem, whereby one uses an incomplete (and likely incorrect) model of an algorithm in order to begin to study it; then, through the scientific process, one can refine the model further.

In essence, neuroscientific studies of language look at the algorithmic processes of language outputs that are represented and processed by an actual brain in real-time. Viewed from this perspective, results from such studies promise to greatly increase our ability to comprehend mechanisms we use in producing or deciphering language activity. The links that can be made are between behavior and neural activity, which creates a necessary relationship between neuroscience and what has been dubbed 'performance'. It follows, therefore, that language as a system abstracted away from the individual is a poor candidate for neuroscientific investigation, to say nothing of the accompanying implication that such abstract methods also hamper the search for a universal grammar. Another way to look at this is to consider that neuroscience implicitly rejects the concept of a grammar being a set of idealized platonic forms. Neuroscience can only study the effects of the 'reification' of these forms; as a result, the reified versions are no longer idealized. Thus, they are not platonic forms but the imperfect 'phenomenal' versions of the forms that one can find in performance (cf. Aristotelian idealism). Results obtained from this perspective form concrete parameters which limit the speculations of the abstract methods, speculations which must conform to actual performances sooner or later, lest they fail the test of reality. A simple conclusion follows: Understanding the problem from both sides of theoretical methodology can only be profitable to our understanding of these complex mechanisms.

2. METHODOLOGIES OF THE TWO FIELDS. The focus on abstraction and formal systems has meant that in linguistics, empirical coverage is often an afterthought. Most linguistic research, particularly of the theoretical kind, works with relatively small sets of data and relies on the intuitions of the native speaker regarding judgments of grammaticality.

The assumption of an idealized speaker has also led to deemphasizing empirical coverage of sentence variants, and has created a rift with the experimental methods of psycholinguists who study utterances, that is, imperfect manifestations of the 'underlying' sentences. Two immediate problems follow: (1) How can we be sure that what we are examining in the phenomenal world has any link to the hypothetical activities presumed to be in operation within the idealized cognitive environment of the speaker; (2) how can we establish

and study these links empirically? At this point, it becomes clear that the performance-competence dichotomy is an awkward distinction, especially if one discards the notion of mathematical grammar in favor of a more procedural, algorithmic grammar that takes into account the flow of information in real-time processing.

A brief primer on the methodology of cognitive neuroscience is useful. In its minimally-invasive investigative arsenal, cognitive neuroscience includes a number of useful and practical approaches and tools: In addition to evidence from cases of acquired brain injury and electroencephalography (EEG), are tools arguably more useful for cognitive studies—namely, event-related electroencephalography (ERP); magnetoencephalography (MEG); positron emission tomography (PET); and functional magnetic resonance imaging (fMRI). In addition, although we will not discuss them further here, there are even newer techniques, such as optical imaging, in which the scatter of light off brain tissue is measured. There are, crudely speaking, three measures that can come from these techniques: Where, when, and how much brain activity is occurring. ERP and MEG provide excellent temporal resolution of brain activity, as measured by the electrical or magnetic fields generated by the firing of groups of neurons. ERP does not measure the location of the neurons generating the current directly (as the current is simply measured as it is conducted all over the scalp), but some information about generators can be gained through source modeling. Because the accompanying magnetic fields do not conduct in the same way that electrical current does, MEG is able to provide much better information about localization of activity for at least the brain events occurring in the outermost layers of the brain. ERP measures voltage changes at the scalp in response to a stimulus, over many trials. It is important to be aware that any waveform from a single trial reflects the activity from the vast number of different processes taking place in the brain, not just the processing of the stimulus of interest. By taking the average of the waveforms immediately following the stimulus, over many such trials, the portions of the waveforms not related to the events of interest will cancel each other out as randomly distributed noise. The resulting waveform can then be examined for the timing, directionality, and amplitude of changes in electrical potential as measured in microvolts over a millisecond-by-millisecond timescale. To gain some perspective, the amplitudes of the waveforms that correspond to linguistic processing are orders of magnitude smaller than those generated by a simple eye-blink. Looking for these very small signals in a sea of electrical noise is therefore a fairly challenging enterprise. Two waveform components have proven particularly useful for the study of language processing: the N400 and P600. The N400 is so named as it is a negative-going component, that occurs at approximately 400-ms post-stimulus onset. In a very general sense, it reflects the ease with which a word (or other item) can be semantically integrated into a context. Words that are semantically anomalous within a sentence elicit a more negative peak than do non-anomalous words. On the other hand, the P600 wave (which is positive going, at approximately 600-ms post-stimulus onset) is sensitive to syntactic anomaly (see Kutas & Van Petten 1994 for an introduction to the use of electrophysiology in psycholinguistics).

Measurements of localized brain activity are best obtained via PET and fMRI, which look at how much blood is being used by different parts of the brain. These techniques are less effective at looking at the timing of brain events. PET is an older technology that is more

intrusive and has moderate spatial resolution. It measures blood flow by detecting radiation from the decay of an isotope introduced into the bloodstream. The spatial resolution of fMRI is far better, and it measures relative levels of oxygenated and deoxygenated blood in the brain, as a reflection of the metabolic activity of brain areas. As is the case in more temporally-oriented brain measurement techniques, the resultant picture of levels of brain activity during an experiment reflect not just the processes of interest, but all current brain activity. These imaging studies rely on analysis using subtractive logic. A baseline condition must be selected that is thought to require all the same processes as the condition of interest. Then, by subtracting one set of activations from the other, the remaining areas of activity are deduced to reflect the processes of interest. This brings up a point that is critical to all imaging techniques: One cannot use these methods to look at the brain for linguistic operations in any kind of straightforward fashion. These investigations rely on the elicitation of a highly constrained set of behaviors. It is only by comparing brain images from two or more conditions that one can make any inferences about processing. The conclusions one can draw from these techniques are only as good as the tasks and conditions used to elicit those images. Creating conditions that vary on only the relevant dimensions requires a detailed understanding of the processes at a cognitive and linguistic level. Without drawing on the understanding provided by both linguistics and psycholinguistics, neuroscience on its own has virtually no hope of yielding useful information about language. As a note of caution, however, we point out the dangers in simply submitting unexamined linguistic abstractions to be 'proved' by science. The scientific process requires that models be subject to further refinement in light of new data. The new models are then subjected to further testing, and the process continues, *ad infinitum*. While linguistic models provide a good starting point for this kind of neuroscientific inquiry, they too should be refined in light of new data.

3. DOMAINS OF STUDY OF THE TWO FIELDS. We can see how, then, a different approach allows for an integration of linguistics with the domain of study of cognitive neuroscience because both approaches are concerned with examining, modeling and understanding the processes involved in comprehending and producing natural language. This methodological stance does not preclude a theory of universal grammar, but rather aligns such a theory with a more plausible, more general communicative ability. Other cognitive domains such as processing and acquisition of pitch and prosody are systems that can then be readily integrated into the grammar.

The three traditional fields of psycholinguistic study are comprehension, production, and acquisition. Traditional linguistic theory has regarded acquisition as a legitimate source of data and part of the proper domain of study, but has been less willing to include evidence from comprehension and production (i.e., what has frequently been dismissed as 'performance'). We see no principled distinction to be made among various issues centering on applicability in these domains, and argue that they all provide important insights into the faculty of language.

There are several elements of processing that are potentially useful in constraining linguistic theories. We have mentioned real-time flow and brain localization, but others include errors both of speech and of comprehension, preferences between equally grammatical and

felicitous sentences, and pathologies of language, both developmental and acquired. As well as serving as practical and realistic constraints for linguistic theories, these are also areas that a complete linguistic theory should eventually be able to account for.

4. CAN LINGUISTICS AND COGNITIVE NEUROSCIENCE CONVERGE OR UNIFY? If linguistics wishes to define itself as a cognitive science, and eventually unify with biology, then a theory of linguistics *must* take into account how language is actually represented and implemented in the minds/brains of its speakers and listeners.

A particularly useful (and hence, unoriginal) analogy here is the distinction between geocentric and heliocentric astronomical models. If the goal is to accurately predict a limited subset of data (e.g., the position over time of planets within our solar system), both models perform well, and there is no basis on which to distinguish between the two. Both are perfectly viable models, if this is the sole purpose. However, the heliocentric model obviously reflects the underlying reality of the solar system's organization far better than does the geocentric. Thus, if one expands the criteria for evaluating the models, the heliocentric model outstrips the geocentric model in predictive power, and can more readily be extended into a larger theory of astrophysics. We argue strongly that a linguistic theory that takes psychological reality into account (which by necessity includes issues of processing) will have far greater predictive power, and be in a position to eventually unify with biology. A theory that explicitly makes a division between the formal, idealized properties of a system and how those properties are put into effect has little hope of extending the model into a wider domain. By explicitly abstracting away from biology, the goal of understanding the biology of language is lost.

Another area where the assumptions of linguistics must be reexamined in order to make contact with cognitive neuroscience concerns the modularity of language. Much of formal linguistics assumes some form of Fodorian modularity (although there are exceptions to this—e.g., the Dynamic Syntax Group described in Cann, Kempson & Marten 2006:409, for further arguments, see also Lieberman 2002). This implies a genuine division between the language acquisition device/language module and other cognitive systems. Of course, even the most strictly modular models allow an interface between the language module and other modules. For example, the production of actual utterances is said to be a property of the interface between the language module and motor systems. Similarly, the comprehension of spoken language must involve an interface with the auditory system. This oft-unquestioned assumption of modularity then informs theory-construction and fitting of the data to the theory. Neuroscience offers better tests of the modularity hypothesis than have been previously available. Overall, the data from neuroscience suggest that the brain is massively interactive and that representations and processes tend to be anatomically distributed, rather than strictly localized. It would not be correct to say that the modularity question has been resolved by neuroscience, but it is clear that alternative analyses offered by neuroscience warrant rigorous testing and promise to yield sufficient valuable contributions to both approaches. They further necessitate a rethinking of modularity and its place in our understanding of the nature and workings of language itself. Such a reevaluation seems a necessary prelude for the effective alignment of the two disciplines.

5. TIME-LINEAR GRAMMARS: AN ALTERNATIVE TO PHRASE STRUCTURE GRAMMARS?

One way in which linguistics can converge towards neuroscientific testability is to adopt grammar formalisms which take real-time constraints into account. This means that an approach to grammar cannot simply be reduced to a set of abstract mathematical rules, but rather involves an unavoidable study and explanation of control pathways which accompany all language activity, from the beginning of an utterance to the successful production or comprehension of that utterance. Grammars such as these measure the build-up and flow of information from an initial state of radical underspecification at the beginning of utterance, to a state of satisfied specification at the end. A well-formed sentence in this view, then, is one that is successfully completed even if it is cut short. Further, a sufficient theory of language is one that has accounted for the myriad decisions of anticipation, control, and build-up which have accompanied the generation of that utterance.

While procedural grammars are not new (Christie, 1977, Reich, 1969), there has recently been a resurgence of interest in the concept of grammars that model language from a left-to-right, functionalist, usage-based perspective: Dynamic Syntax (Kempson, Meyer-Viol & Gabbay 2001, Cann, Kempson & Marten 2006), Left Associative Grammar (Hausser, 2006), and Discourse Information Grammar (Sévigny, 2003). What distinguishes all of these approaches from the phrase structural (PSG) tradition used in most varieties of generative grammar is the underlying and guiding metaphor. PSGs are based on the metaphor that natural languages are formal languages and that there exists an autonomous syntactic module that is (largely) independent of semantics. In contrast, the time-linear approaches envision the grammar of a language as a series of procedures permitting humans to construct partial representations as a sentence is being processed and understood or (re)constructed. Thus, knowledge of language is knowledge of the processes and information accumulation necessary to understand and use the language. In the words of Tomasello :

...many linguists and psychologists believe that there is a biological basis for language, just not in the form of an autonomous Generative Grammar. Just as plausible for these linguists is the hypothesis that language rests on more general biological predispositions, such as the abilities to create and learn symbols, to form concepts and categories, to process information rapidly, and to interact and communicate with other persons intersubjectively. (1998:xi)

Time-linear grammars attempt to create a framework within which cognitive scientists can frame and articulate linguistic theories that are empirically based and psychologically plausible. It does not necessitate the a priori assumption of an independent language module in the mind, but does encourage hypotheses about the interplay of different types of information in language processing.

The current state of our knowledge does not allow us to select between these different views of grammar. However, by explicitly posing these as empirical questions, and as testable hypotheses rather than philosophical arguments, we advance the state of linguistics as a true science, and a cumulative one. Simply accepting one putative cognitive architecture as canonical and then adapting the domain of neuroscientific investigation to fit

it would be unscientific. This is the main area in which proper experimental construction and the situation of the experiments in the larger body of cognitive neuroscience can help bring linguistic theory back to a place of importance in the wider cognitive science arena. Theories of the neurological function of other communicative systems should inform linguistic theory, even if that means giving up long-held theories (for example, strict Fodorian modularity as a basic architectural premise).

A truly powerful theory of language should also be able to make contact with areas outside of language. And, at least eventually, it should be able to account for how language interfaces with other human faculties, including memory, attention, emotions, social processes, musical abilities. It should also show how we can account for individual differences, including a range of normal and abnormal developmental and other psychological conditions. Recent work from Lamb (1999), Jackendoff (2007), Sévigny (2003) and Kempson *et al.* (2001) has attempted to bring linguistics back to its former position of centrality in the social and cognitive sciences. Jackendoff has put forward a parallel cognitive architecture that modernizes the generative model in an attempt to bring it back into sync with the larger fields of cognitive neuroscience and social cognition. Kempson *et al.* have proposed a time-linear formalist approach to grammar that builds propositions incrementally as more information is accumulated over time during the course of speech. Her theory, Dynamic Syntax, is largely an attempt to build a formal grammar, with predictive qualities, based on Relevance Theory (Sperber & Wilson, 1995). Lamb and Sévigny take a neural network based approach to linguistic modelling.

A necessary caveat: Before rushing into a synthesis of neuroscience and linguistics, it is important that we not be misled into thinking that simply using neuroscientific techniques automatically makes linguistics more of a 'science'. Instead, the focus needs to be on creating theories that are falsifiable. In other words, they make predictions beyond the data they were created to explain that are empirically testable. Dogma-driven neuroscience is just as problematic as any other kind of unexamined ideological research program.

6. CONCLUSION: DEFINITELY FRIENDS. We argue here that neuroscience does have a great deal to offer linguistics. It offers a means of testing linguistic theories, and as such enables us to ground these theories in reality. This can only make our theories stronger, more able to account for a wider range of data, and effectively provide a means with which linguistics can function as a cumulative science. It also enables linguistics to benefit from theories, data, and solutions proposed by the other cognitive sciences that use neuroscientific methods. Crucially, this does not have to change the fundamental goals of linguistics, but can instead advance them. In order to allow for this, however, we do need come to terms with the proper role of processing as part of the object of study. Linguistics can only make useful contact with other domains, including neuroscience, and, more generally, biology, by letting go of its insistence on studying only abstract, idealized forms. Rather, linguistic theory should account for all of language in its imperfect, real-time, cognitively and neurologically implemented human glory.

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EXPLANATION AND PREDICTION IN PHONOLOGY

JEAN-FRANÇOIS SMITH
Université de Lausanne

A CLOSE ASSOCIATION between explanation and prediction is often taken for granted in a typical scientific discourse.¹ The aim of this paper is to show that this includes phonological literature (or parts thereof), but also to argue that in such a particular case this view is untenable for two reasons. We either face a logical problem or we must submit to the fact that our knowledge of phonological structure does not really progress through prediction. As a result, we need to review our conception of explanation as well.

1. ONE VIEW OF EXPLANATION. The following examples illustrate how some phonologists may consider this relationship between explanation and prediction. It should be noted that I do not claim to be exhaustive. I merely give clear evidence for a view that can be found as long as almost thirty years ago as well as today. This in fact supports my belief that it is a pervasive one, although this remains to be proven later in a more complete fashion. Also I will not dwell on the specifics of these examples, as their content in itself is irrelevant to my point, regardless of their individual merit. My interest lies only in the authors' reasoning.

1.1. EXAMPLE 1. Anderson (1979) equates in principle scientific explanation, prediction and well-known explanatory adequacy (Chomsky & Halle 1965). He says that the ideal explanatory adequacy of a theory is attained when in fact its full predictive capability is achieved (Anderson 1979:17–18, 30). But Anderson is a realist: He also claims that we cannot fully predict in advance the result of conflicting rules, as for instance those cases involving rule-ordering, rule opacity, and so on. Nevertheless, he still maintains that useful knowledge from these facts can be gained with proper study and insight, although it is always after the fact. Therefore, he speaks of an *exegetic* adequacy of a theory, short of having total explanatory adequacy (or full predictive power).

1.2. EXAMPLE 2. Lass (1980) argues sharply against the possibility of explaining sound change, a position he revisits in Lass (1997). He explicitly assumes an asymmetry between explanation and prediction in that the former always implies the latter, but not vice versa. He thus defends the following:

- a. an inductive or probabilistic reasoning has no explanatory value, for it has zero predictive value (1980:20, section 2.3);
- b. the concept of *naturalness* is not explanatory since, *inter alia*, it allows no prediction whatsoever (1980:143, section 5.1 and also chapter 2);

- c. the concept of *function* is not explanatory since, *inter alia*, it too allows no prediction at all (1980:143, section 5.1 and also chapter 3).

The logic of the argument is in the end simple enough. If all explanations imply a prediction, then a statement which allows no prediction cannot be an explanation.

1.3. EXAMPLE 3. Dinnsen remarks that Schane's (1972) maximal differentiation principle yields predictions that turn out to be false. On this basis he concludes: 'Consequently, one of the major well-defined classes of phonological rules, i.e. non-assimilatory neutralizations, is totally *inexplicable*, at least phonetically' (Dinnsen 1980:178, emphasis added). Another good hint at Dinnsen's view on the relationship between explanation and prediction is his characterization of Harms' progressive devoicing rule (1974): It only partially explains, because it only partially predicts.

1.4. EXAMPLE 4. Béland, Paradis and Bois (1993) do not make explicit their views on prediction and explanation, but I believe a careful examination of their argumentation is telling. On the one hand, they wish to explain phonemic paraphasias produced in specific types of consonantal clusters by French-speaking subjects. On the other hand, in order to do so they formulate several predictions and set themselves to the task of validating them. For example:

- a. 'In this study, we will see that the TCRS [theory of constraint and repair strategies] allows us to make strong predictions about error patterns found in word stimuli comprising heterosyllabic clusters with one versus two PNs [place nodes]' (1993:289).
- b. 'For word and non-word stimuli with a 1 PN cluster, the reverse pattern of substitution error was also correctly predicted' (1993:293).
- c. 'We have seen that paraphasias tend to be as inexpensive as possible, which is predicted by our hypothesis in (7f) that repairs tend to apply minimally according to the Minimality Principle and the PLH [phonological level hierarchy]' (1993:297).

While the methodological core of their demonstration is to confirm predictions, they chose the verb *to explain* in the statement of their objective. It seems therefore that, for these authors, to predict is somehow to explain (1993:279, 296).

1.5. EXAMPLE 5. Kiparsky uses the same method as Béland, Paradis and Bois. His stated objective is to illustrate how underspecification in phonology can explain certain phenomena (1995:660). He then proceeds by verifying predictions deduced from the principle in question:

Autosegmental phonology allows assimilation to be treated as the spread of a feature or feature complex from an adjacent position. Coupled with assumptions about underspecification, feature geometry, and the locality of phonological

processes, it yields a rich set of *predictions* about possible assimilation rules. (1995:660, emphasis added)

1.6. EXAMPLE 6. McMahon shares Anderson's open-mindedness about explanation in her critique of optimality theory (OT) when she concedes that the inability to predict everything is not entirely bad, as a partial explanation is better than no explanation at all (*cf.* Anderson's exegetic adequacy). Thus she says:

'A substantial problem for both evolutionary theory and OT is that relinquishing a single explanation type in favor of system-specific description for some phenomena can be seen as admitting defeat... Things can be otherwise, and often are. Sometimes it is necessary to accept that; and to accept description, and partial historical explanation without possibility of prediction, as the best we can do, and indeed the best we will ever be able to do' (2000:282).

Here again, we see the idea of a partial explanation in the context of either an imperfect, or lacking, prediction.

1.7. EXPLANATION QUA PREDICTION IN PHONOLOGY. On the strength of such examples, which are not unique in the literature, my working assumption is that, in phonology, the following principle is held to various degrees: To explain is to predict, or vice versa, or at least that explanation and prediction are so closely linked that one proportionally suffers from the imperfection of the other.

It seems however that only philosophers have found a real interest in studying the relationship between scientific explanation and prediction, whilst no phonologist has ever attempted an analysis of how this idea would actually play out in his or her field. I think this should be done.

2. TWO VIEWS ON PREDICTION. Although the authors cited all seem to agree on the nature of explanation, the same cannot be said about the nature of prediction. When Anderson, Béland *et al.* and Kiparsky lay much emphasis on the act of predicting, what they are in effect saying is the following: From a hypothesis *x*, predictions *y* and *z* can be deduced, and when these predictions are shown to be correct, i.e. when *y* and *z* are true, hypothesis *x* is therefore correct.

In this context, 'explanation by prediction' is shorthand for 'we have explained something when its statement is otherwise shown to be true'. This looks trivial at best, but we will see later that in phonology it is not as simple as this.

Lass, Dinnsen and McMahon speak for their part of a partial or impossible explanation when prediction is either problematic or lacking. This distinctive case inevitably involves some parallel between the two concepts that is far unlike a simple truth-relationship held between hypothesis and prediction statements. Since a scientific hypothesis offered as an explanation will always yield predictions, whether they turn out to be true or false, truth value has no bearing on there being a prediction at all, but only on its correctness. So what

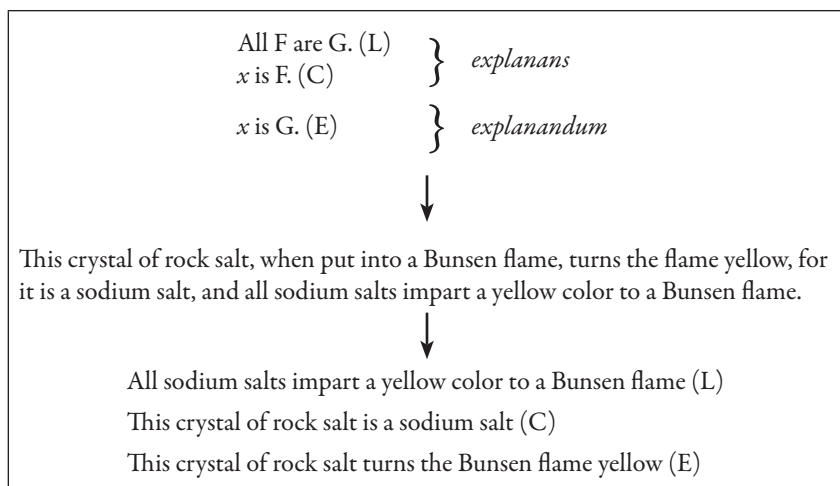


Figure 1. Schema of a D-N explanation (after Hempel 1962).

sort of relationship can there be for us to picture prediction to be some form of a mirror image of an explanation?

The bad news for phonologists is that the only comprehensive framework which provides us with a complete answer is that of philosopher Gustav Hempel, to which Lass (1980) and Dinnsen (1980) actually refer. But this framework faces a significant logical problem.

3. A LOGICAL PROBLEM: PREDICTION AND THE D-N MODEL. In their seminal paper, Hempel and Oppenheim (1948) claimed that there is a logical symmetry between scientific explanation and prediction. Their *deductive-nomological* model (D-N for short, also called *covering-law* model) portrays explanation as the act of inserting a statement to be explained, called the *explanandum*, in a valid deductive argument. This *explanandum* is in fact a conclusion (statement E in **Figure 1**), known beforehand, to which we provide a set of premises, an *explanans*. This *explanans* is the conjunction of a law (L) or law-like statement and a set of specific circumstances (C), which completes the deduction.

Hempel has repeatedly insisted that a scientific explanation in this view is an argument answering a why-question showing that we can expect a phenomenon to happen (e.g. 1965a:337). The distinction between an explanation and a prediction resides therefore in the starting point of this argument and is a purely pragmatic issue. When we know the *explanandum* first, we give it an *explanans* to produce an explanation. When we know the *explanans* first, however, from it we can deduce the *explanandum* as a simple matter of logic before it happens. Thus the argument becomes a prediction. This is how explanation and prediction are symmetric.

It would not be far from the truth to say that in developing this model, Hempel and Oppenheim opened a true Pandora's box in spite of themselves. Less than a full page was initially dedicated to this symmetry, because it is only a consequence of their model by the

result of logic. However, it unleashed a torrent of critiques in the following years to which Hempel was forced to answer in far more detail (in Hempel 2001/1962, 1963, 1965a).

Grünbaum (1962) offers an interesting take on this issue. In principle, he agrees with the critics, such as Scriven (1958, 1959, 1962), Scheffler (1957) and Rescher (1958). In practice, however, he does not. Indeed, Grünbaum considers (rightly) that Hempel's symmetry is purely logical, involving only the structure of the arguments. In contrast, what critics have properly demonstrated is an asymmetry in the assertibility of explanation and prediction in time. But this is exactly what Hempel had already conceded (the difference is pragmatic, not logical).

Be that as it may, Scriven (1958) is still right in arguing that we must study science in its practice, not only in its internal logic. Therefore, Grünbaum's attempt at waving the criticism aside falls short. The point is that the assertibility asymmetry is more relevant to science than the logical symmetry (which, as I pointed out earlier, was a minor concern in the original paper anyway). For that reason, the critics' voices cannot be ignored—and this is why many examples to the effect that explanation and prediction cannot be symmetric or simply the same at all in the actual methodology of science have accumulated over the years. Bunge (1998:73–110) has devoted a whole chapter to the analysis of this problem.

Basically, there are two classes of such examples. The first one is comprised of those cases where prediction does not amount to explanation. This is supported by Hempel himself (2001/1962, 1963, 1965a) and the most famous example is probably the flagpole problem, attributed to Sylvain Bromberger by Hempel (2001/1962) and Salmon (1998). Picture a vertical flagpole casting a shadow on the ground. It is possible to explain, in the D-N sense, the length of this shadow when we know the height of the pole, its opacity, the elevation of the sun in the sky and the rectilinear propagation of light. Alternatively, from the length of the shadow, the position and opacity of the pole, the elevation of the sun and the rectilinear propagation of light, we can deduce (which should also be to predict) the height of the pole. But no one would claim that we would have thereby explained the height of the pole by the length of the shadow.

Another well-known example is the drop in atmospheric pressure on the barometer (Scriven 1959:480).² Reading the device enables one to predict a storm, but it does not explain it. This touches upon a fundamental difference between prediction and explanation, according to Scriven (1959:480). We only need to establish a correlation between facts in order to predict; but to explain, something more is required. This, for many, would be causality (notably Scriven 1959, 1962, 1975 and Salmon 1971, 1975, 1998), but Hempel (1965a:352–353) refuses to see all possible explanations as causal.

The second class of examples is meant to demonstrate the converse: To explain is not always to predict. Historical explanations, when assumed to exist at all as in Hempel (1965b) or Scriven (1959) *contra* Lass (1980), are indeed explanations without prediction. This delicate issue is unnecessary to pursue, however, as the best example by far has been provided by Salmon (1971, 1998), even though he has never been so concerned with the symmetry problem.

At the time Hempel (2001/1962) replied to his critics, he also proposed an alternate model of explanation that he called the *inductive-statistical* model (I-S). The difference

between D-N and I-S explanations is roughly in the degree of certainty. A logical deduction from a law gives one-hundred-percent certainty, while an inductive argument derived from a probability statement is statistical. Even so, his definition of a scientific explanation remained unchanged (see above). It is no surprise then that Hempel thought an I-S explanation should always strive for the highest probability possible, i.e. a near-certainty.

Salmon's response hinges on this way of bringing probability into play. If we explain with high probability, how high is high? Are events with a low probability unexplainable? If a coin is such that when tossed it has a 0.9 probability of landing heads up, do we say that landing tails up cannot be explained? Because explainable but statistically complex events always have low probabilities,³ the task of defining a clear and working definition of a high probability is impossible according to Salmon. Therefore, for him, high statistical probability for its own sake has no decisive role in the act of explaining, it is rather statistical *relevance*. If Salmon is right, the following conclusion is inescapable: As long as the correctness of an explanation does not depend on its probability value in and of itself (and thence, deductive or inductive certainty), predictive power and explanatory power cannot be the mirror-image of each other. Simply put, they are not proportional.

This leads us to the logical problem I was referring to earlier. If my review of the literature has shown that in practice all predictions do not include all explanations and that all explanations do not include all predictions, then at best the two sets only partially overlap and they are absolutely not to be confused. How then can we determine the difference between them? With the D-N model, as influential as it has been, we simply cannot. Satisfied with its internal coherence, it eschews the so-called pragmatic distinction between explanation and prediction, thereby creating a new logical, or definitional, fallacy: The two concepts are distinct where it matters the least and are confused where it matters the most. Hence I believe the only solution is to acknowledge from the outset that what really happens in science is that explanation and prediction statements simply do not have the same *content*.

4. A PRACTICAL PROBLEM: PREDICTION AND PHONOLOGY. The preceding point could perhaps vindicate the first view of prediction set out in section 2 above. Indeed, it assumes that explanation and prediction statements do not have the same content. This conception is in fact much more intuitive than Hempel's. Unfortunately, it too cannot realistically support the methodology of phonology. This time, the problem is practical in nature.

Let us review this model first. We have a phenomenon O that we wish to explain and a theory T elaborated to this aim. T enables us to make prediction P about O, and we verify this prediction by conducting experiment E. When E is successful, theory T is thereby corroborated and we consider it to be true (until proven otherwise, of course). So T explains O, by virtue of P being true. This shows how P only indirectly explains O and how explanation (T) and prediction (P) statements truly differ in content.

When Newton published his gravitational theory in 1686 (T₁), Halley applied it to comets (O) in order to evaluate Kepler's hypothesis to the effect that they are celestial objects in movement (T₂). Halley observed one comet and then calculated precisely where and when it would reappear seventy-two years later (P). The experiment (E) was straightforward:

They just had to be there, but of course both Newton and Halley had long passed away. So others witnessed in their stead this spectacular feat of modern science at the time. The conjunction of T_1 & T_2 explained O in a perfect way.

This example, taken from Lakatos (1980:5), is strikingly clear on how prediction and explanation interact in the practice of science, or at least the natural sciences. Can we be so sure that it actually works as beautifully as this in phonology?

I assume that phonology, as part of grammar, a structural linguistics research program or what Itkonen (1978) called autonomous linguistics, is inherently corpus-based. Of course, any phonological description of a language is—or should be—built upon corpus study and analysis. Yet all types of phonological evidence listed by Ohala (1986) are also gathered into a corpus: sound patterns, sound changes, speech errors, word games, etc. His examples of experiments are no different. To elicit phonological forms of one type or another from a group of subjects still yields a collection of data, which is later analyzed, i.e. made sense of by looking for meaningful patterns amidst the ubiquitous phenomena of variation.

This methodology lacks compatibility with prediction because these meaningful patterns are used as evidence for or against generalization statements taken alone. But by themselves, such statements are independent of time, or atemporal, since their generality or universality makes them concurrently valid for all events of the past, present and future. General statements are not predictions in any other sense than that weak, overly inclusive way; and strictly speaking, it is arguably wrong to fully confuse the two. Hempel would agree; recall that for him a full *explanans* is never a law or hypothesis in isolation (L in **Figure 1**). It must be completed by specific time and space circumstances (C in **Figure 1**).⁴ Halley's ultra-precise calculation played that role.

It appears that phonology offers no clear-cut parallel; but this should not be so surprising. Phonological explanations or hypotheses are structural rules, processes or constraints that have no predetermined existence in space and time.⁵ Phonologists do not study the particular *events* of phonological rules, processes or constraints, they study these general rules, processes or constraints *themselves*. Phonologists only want to prove that these things exist, not when they will happen. This indeed is assumed from the start, as prior observations are used as evidence for or against a hypothesis. Interestingly enough, Dretske (1974) has argued similarly for the whole enterprise of grammatical theory.

This is why, in the end, phonological predictions can even be about facts that have *already* happened. When, for example, Paradis and LaCharité claim to predict phonological adaptation of borrowings, they do not predict when and where a borrowing will occur (2001:260). They do account for phonological adaptation of borrowings in their corpora but they do so *ex post facto*. The same goes for Kiparsky's assimilation rules mentioned above (example 5, section 2) or any other principle that accounts for phonological structure.

Therefore, the impression of being able to predict comes mainly from the fact that a hypothesis precedes the constitution of a corpus and thence the discovery of the supporting evidence, which is utterly distinct from the actual occurrence of phonological events, if such entities can truly be conceived (which I doubt). We should admit that this sort of prediction is inconsequential and not representative of a canonical natural science.

On the surface, an experimental setting seems to belie the above interpretation due to the fact that the controlled elicitation of phonological tokens may be seen as perfectly relevant events in the form of spontaneous application of phonological rules or other processes. However, experiments in phonology only help us determine what is productive and non-productive. In the first place, they do not help discover those rules or processes themselves, of which various competing candidates are actually presupposed in such situations. Only corpus analysis can do this, which brings us back to square one.

5. CONCLUSION: ANOTHER VIEW ON EXPLANATION. I do not contend that there should be no link whatsoever between prediction and explanation. However, the most influential view on the matter is insufficient in itself (the logical problem, section 3). In addition, it is questionable that phonological knowledge progresses through prediction at all (the practical problem, section 4). Consequently, the matter cannot be considered settled and hence taken for granted.

More importantly, I do not mean to say that phonology has no value because ultimately it seems condemned to Anderson's exegetic adequacy. I cannot stress this point strongly enough. Instead, we should turn the tables by utterly abandoning the idea that phonologists predict in any meaningful manner, given the nature of their object of study (phonological structure). This is a huge challenge, because analytical philosophy in natural sciences has had an immense influence on our contemporary thinking, as Itkonen (1978) has decried in length. Questioning prediction can only undermine phonology in this mindset, but I in fact suggest that we forgo this attitude. To paraphrase Itkonen (1983:33), we cannot criticize linguists for not being physicists.

In this context, a revised position on prediction automatically calls for a new view on explanation in phonology. And here we may envisage several explanation types depending on various points of view. This is yet another way to go beyond Hempel's rigid explanation-prediction framework.

Salmon (1998:68-78) has suggested in the same spirit that different models of scientific explanation are indeed complementary. Instead of dwelling on incompatibilities in their logical and formal aspect, he evaluated their conceptual value, i.e. what type of understanding of the world they bring about. How does science insert phenomena to be explained within a global worldview?

On the one hand, science can aim at *unifying* knowledge. This is how bringing together disparate phenomena under a limited number of principles can result in a coherent picture of the world (Salmon 1998:85-86). The paradigm example is the so-called Newtonian synthesis, which unified the knowledge of the movement of planets, pendulums, tides and comets.

On the other hand, a scientific inquiry can legitimately endeavor to understand the inner workings of an otherwise obscure mechanism. This *mechanist* type of knowledge is related to the curiosity that makes us open a watch in order to observe all the subparts of the whole, before putting them back together again (Salmon 1998:87-88). One such example in the history of science is the work of Albert Einstein and Jean Perrin who, at the turn of the 20th century, explained the movement of microscopic particles in a fluid.

UNDERSTANDING	FORM
Explanation as... ... unifying knowledge ... mechanist knowledge ... etc.	Explanation through... ... deductive reasoning ... inductive reasoning ... statistical relevance ... functional relevance ... etc.

Figure 2. *The two sides of scientific explanation.*

If this unification-mechanism duality can enlighten phonological theory, I daresay we should not do without it. It seems in fact to correspond to the sort of universalist-particularist dichotomy that divides generative and functionalist research programs in phonology. Generative paradigms typically unify our knowledge of languages under a single yet broad system of features, rules, constraints, etc. Functionalist phonology of the typical Prague Circle tradition—think of Martinet, and Trubetzkoy of course—studies and defines separately the phonological systems of all languages, as if they were different watches (albeit with the *same* method all throughout; thus the analogy admittedly stops there).

I therefore propose a two-dimensional model of scientific explanation focused on both understanding and form (**Figure 2**), but without taking for granted, as Salmon does, that the former depends on the latter. This tentative typology goes far beyond the single issue of prediction and opens up the possibility of a deeper analysis of what it really is to explain in the practice of phonology, a matter of the utmost theoretical significance.

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² Salmon (1998:319) refuses to attribute this very well-known example to anyone in particular.

³ A fair coin tossed 10 times has a probability of about 0.246 to yield 5 heads and 5 tails *regardless of the order*! See Salmon (1998:98).

⁴ This must not be confused with the *linguistic* context of a phonological rule, which resides on a different level altogether.

⁵ Cf. ‘Thus, for the purposes of linguistic analysis, we are not interested in the individual utterance of *Goodbye, Open the window, please, What’s that?* etc. in appropriate circumstances at given points in space and time, but in all or any instances of those utterances. Linguistics is normally concerned with *types* rather than *tokens*’ (Mulder & Rastall 2005:8).

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PERSONAL PRONOUNS, INTERPRETANTS, AND NETWORKS

WILLIAM C. SPRUIELL
Central Michigan University

MODERN LINGUISTICS IS, as is widely recognized, deeply indebted to the conceptual framework put forth by Ferdinand de Saussure. His distinctions—between synchrony and diachrony, between *langue* and *parole*, between form and substance—made possible the extraction of linguistics as a field aspiring to be science from the avowedly humanistic substrate of philology. While simplifications are necessary for coherent descriptions, however, they may also enable simplistic ones; the responsibility of the analyst is to remain mindful of what may be lost, as well as what may be gained. In this article, I argue that two of Saussure's most influential ideas, the binary sign and the chess game metaphor, render semiosis less complex—less contingent—in ways that are problematic for dealing with common linguistic phenomena, and that it is in part these reductions in contingency that lead to the kind of ascientific resort to abstractions that analysts such as Yngve (1998) have criticized. I suggest that an alternate semiotic model, one based on the ternary signs proposed by Peirce, may serve as the basis of a richer approach, and that the incorporation of the notion of conditioned activation in modern neural network models already implicitly (and in some cases, potentially explicitly) uses such ternary signs. Further, I argue that acknowledging increased contingency in semiosis can go far to eliminate the perceived gap between semiotics and Yngve's view of empiricism.

Saussure's concept of the sign is a binary one; the sign itself consists of the relation between a signifier and a signified. This, in itself, makes semiosis contingent on only two factors: the system must contain the sign, and the signifier must be present in some way. Given those two conditions, semiosis occurs. The signifier itself need only be distinguishable from other signifiers; it is simply the fact that Signifier X is not any other signifier that makes it what it is. Saussure's chess game metaphor grounds this view in an easily-recognizable experience: one can use *anything* handy as the bishop in an impromptu chess game, as long as it does not look like any of the other pieces. A penny can make an excellent bishop, as long as one does not also use a penny for the knight. While a chess game is a good foundation for an explanatory metaphor, however, it is rather anomalous as a human activity. Chess's rules are coherent and (within limits) invariant. The difference between chess games comes not from variation in how a given piece *can* move (*langue*), but how it *does* move in a real game (*parole*). Saussure's use of chess as an analogy was insightful, and admirably suited to its discourse context, but taking the analogy too literally, as later analysts have arguably done, leads to a problem: language is much messier than chess, and ignoring the mess doesn't make it go away, or become less meaningful.

1. MULTICONTINGENT SIGNIFICATION. One does not have to go far to find linguistic phenomena that do not fit neatly into the chess-game metaphor; all that is needed is a situation involving a signifier whose signification appears to depend on a large number of disparate factors. For purposes of argument, I use the choice of second-person pronouns in Middle and Early Modern English as a paradigm example. As with most Indo-European languages, English originally had distinct second-person singular (*thou*) and plural (*ye*) forms. And, as with related languages (cf. Brown & Gilman 1960), the marking of number became bound up in the marking of politeness or solidarity, to the point where number marking in some ways was secondary. A single individual could be referenced by *ye* or *thou* (with the latter being either familiar or impolite, depending on the views of the addressee), although a group of people was never addressed by *thou*. While *thou* thus reliably signified second-person singular reference, *ye* was ambiguous—it could, like *you* in modern standard English, be either singular or plural. But quite unlike in modern English, it wasn't ambiguous in this sense across all contexts.

Politeness and solidarity were not the only relevant factors for the *thou/ye* choice. Burnley (2003), in an analysis of pronoun usage across the *Canterbury Tales*, has noted as relevant issues (a) ages of speaker and addressee, (b) social class of speaker and addressee relative to each other, (c) absolute social class of interlocutors, (d) occupation, and (e) lexical context of use (collocation effects)—in addition to (f) number, of course. Similar complexities in usage have been argued for Shakespeare as well (Mullholland 1967). Further, since *thou*-usage remained in some dialects much longer than in standard London English, it is reasonable to suppose that use of *thou* could act as a regional marker as well, at least later in the period under discussion.

Occupation was primarily a factor in the case of clergy, who as early as the thirteenth century (Mullholland 1967) sometimes used *thou* in situations where the developing system of *courtesie* would have called for *ye*, as part of a social critique of *courtesie* itself. This mobilization of pronoun choice as a medium of social commentary is a technique of long duration; George Fox, the founder of the Society of Friends (the Quakers), devoted an entire, quite lengthy publication to this question in 1660. The *Battle-Door* excoriates those who would use *ye* for singular reference. While to a modern reader it seems a bit obsessive (his *modus operandi* is to list a pronoun paradigm for an ancient language, point out that it distinguished singular from plural in second person, indicate that only a fool would mess that up, then go on to the paradigm for another language, and then another and another), his approach would work quite well on then-contemporary readers to pit one set of beliefs (respect for Biblical language, value for scholarship, antipathy toward the Papacy, which Fox argued was the source of singular *ye*) against another (accepted beliefs about pronoun choice). To understand Fox's fixation on *ye*, it is crucial to remember that it was part of a larger set of aggressively egalitarian practices, such as refusing to take off one's hat around the nobility (an act of *lese nobilitie* Fox and his followers were known for).

In short, then, a Middle or Early Modern English speaker hearing someone say *ye* would likely draw on an extremely wide range of facts, inferences, and observables factors in order to identify the reference as being singular or plural. While it is tempting to characterize this process as involving unitary categories like social class, in reality what the hearer would

be exposed to in context—as all hearers are—is information from his/her sensorium. Crucially, to determine *ye* reference, a significant portion of the relevant information would not be directly associated with what we usually think of as the linguistic message. Further, the process was not a simple passive process of decoding—use of *thou* in a situation in which the hearer expected a *ye* could trigger a reevaluation of the hearer to make sense of the pronoun (e.g., ‘she just used *thou*—she must be a Quaker’ or ‘she just used *thou*—she must be from the rural north’).

It is rather as if, in Saussure’s chess game, whether a penny acted as a knight or a bishop depended on whether the game was being played on an even-numbered day, over a meal including barley products, within a wooden building, by nuns. And to make the game more interesting, imagine that partway through, one of the nuns ostentatiously removed the barley soup from the table and replaced it with surströmming, so her penny could move differently—or worse, moved the penny differently and caused the other player to suppose that the grain in the soup only *looked* like barley.

This presents a problem for binary sign systems that is addressable, but with difficulty. One approach would be to posit signifiers that are massively complex—rather than a sound sequence that a native speaker would parse as *ye*, the signifier for second-person singular could be presented as that plus a very, very large number of other elements, the unitary presentation of which would trigger semiosis. However, the exact set of inputs triggering what, for brevity’s sake, I term the ‘*ye* as singular’ sign would vary from situation to situation; making the signifier a large set of components would lead to characterizing each of those situations as involving a different signifier (and thus a different sign). Saussure’s binary sign does not, in and of itself, admit of a signifier that is a complex set of items with inferential rules holding among them.

Alternately, an underspecification approach could be used—one could argue that *ye* signified second-person reference, but did not signify singular vs. plural at all, with the latter information being added in some other way. This is an attractive option in cases in which the resolution of semiosis is delayed for the additional information—when, for example, the hearer perceives ambiguity and waits for the information that resolves it. There is no reason to believe, however, that all incidences of the second-person pronoun triggered such a delay, though; it is reasonable to assume that at least some cases involved usage that the hearer would not have perceived as ambiguous at all. In those cases, an underspecification account entails claiming that the hearer is partitioning semiosis in the absence of any *a priori* need to do so. In other words, if a speaker reacts to a given instance of *ye* as unambiguous in context (not just second-person, but, say, second-person singular), the underspecification approach necessitates arguing that the speaker (a) connected *ye* to second-person reference and (b) inferred the singular via some other means, rather than simply connecting *ye* plus other things to ‘second person singular.’¹

2. **TERNARY SIGNS AS A POSSIBLE SOLUTION.** Charles Peirce, unlike Saussure, adopted a ternary conception of signs; to Peirce, the sign was the interaction of a signifier, a signified, and an interpretant, the latter being defined roughly as that in relation to which the signifier signified the signified (Merrell 1997); see **Figure 1** (overleaf).²

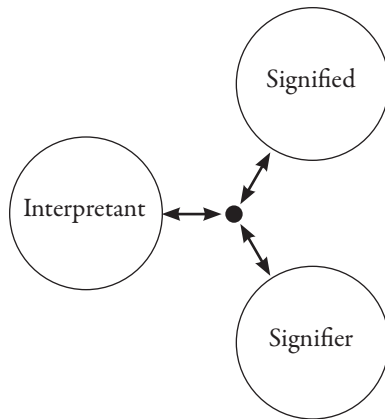


Figure 1. Ternary sign relation.

Two points about ternary signs are particularly relevant here. First, the interpretant in this schema acts to dramatically increase what I earlier called the contingency of signification. If *tree* in English signifies something, it does so partly by virtue of the fact that the hearer speaks English (i.e. the speaker has to have the sign, something Saussure's system could deal with) but also partly by virtue of the fact that the hearer processes it as English, and as a separate word, and—in the case of hearing someone who also pronounces *three* as /tri/—in a particular context. Out of context, the signifier might not be a signifier at all, or might be part of a different sign relationship; the interpretant, while it represents far more than simply context, provides an explicit mechanism whereby contextual effects can be taken into account. Second, each of these elements—the signifier, the signified, the interpretant—can serve as any of the three elements of another sign relationship at the same time; the interpretant of one sign can be the signifier or signified of another.

Returning to the problem of *thou* and *ye*, an approach based on ternary signs could be constructed so that there are, in fact, multiple sign relationships sharing the same signifier, but with different interpretants. Moreover, since the sign includes the interpretant, a different interpretant leads to a different sign, even if what is signified at that stage is the same. We could thus have an account with three different second-person singular *thou* signs—familiar *thou*, rude and assertively egalitarian *thou*, and hick-from-the-backcountry *thou* (Figure 2). Once a signifier is made sense of by construing via a particular interpretant, the interpretant itself can then act as a signifier of something further; e.g., 'his *thou* there would make sense if he were Quaker, so I think he may be Quaker'. This would be the equivalent, in the earlier chess game analogy, of moving the penny differently to get the other player to check the soup.

By this point, readers conversant with network approaches to modeling language, such as that proposed by Lamb (1998) and others, may have noted a number of familiar characteristics in this account. Network models, for pragmatic reasons, must allow a critical role for contingency (if a given signifier automatically activated a signified, there would be uncontrolled spreading activation), and—if they are to adequately account for observed

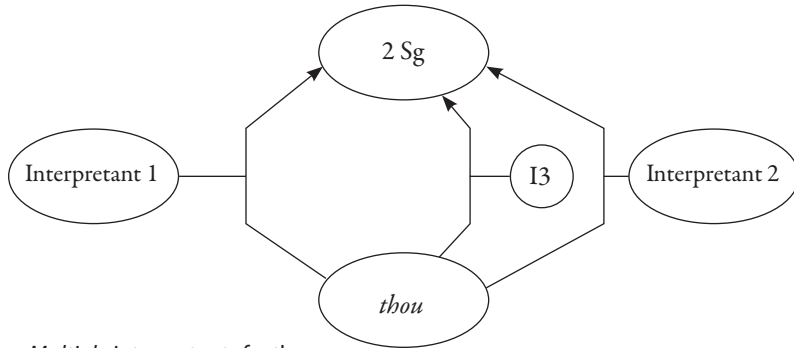


Figure 2. Multiple interpretants for *thou*.

effects like semantic priming—must also locate at least part of this contingency in contextual effects (again, with contextual being considered quite broadly here). **Figure 2** could be recast without too much alteration into a stratificational grammar notation. In network models, the factors affecting activation are not typically represented as single elements analogous to the interpretant in the ternary-sign approach I am suggesting; instead, potentially quite complex structures can be adduced to perform this function (since a network is, after all, a network, every connection has the entire rest of the network connected to it in some way or another). However, the sum total of the relevant connections affecting the chance of a given node-to-node activation occurring may be considered together as a functional unit.³ With the important caveat that activation in neurological networks, unlike in abstract semiotic models, takes place in time rather than being instantaneous, this unit and the interpretant can be seen as analogous.

4. HUMEAN LINGUISTICS. Introducing the interpretant to the sign relation, and drawing an analogy between it and the set of activations determining node activation in a neurological network, yields a potential bridge between a semiotics grounded in the philosophical tradition and a more empirical approach. To the extent that they are accurate representations of some of what we know about cognition, neurological network models must take as inputs only what the human perceptual system gleans from the sensorium. If Peirce is to be added to the account, he must arrive in the company of Hume. One component of Yngve's (1998) critique of modern linguistics is that, partly by constructing an abstract domain within which to function, it has cut itself off from considerations of much of the information about a speech situation that might otherwise be seen as crucially important. Constructing a category label like 'phoneme' (or, to use an earlier example, social class) and then reifying it obscures the dynamics of what happens while at the same time introducing an element that comes to be seen as a primitive, without any recourse to validating its existence other than via appeal to particular aesthetic notions of simplicity.⁴ If the interpretant is seen as, in part, representing at some level the factors upon which signification is contingent, then it can be incorporated rather easily into the state notation Yngve uses.

Yngve (1998:153) considers the change of any one linguistic property of an individual as an effect that can be stated in terms of (a) required inputs, (b) required extant linguistic properties, and (c) change over time:

$$\{I_1, I_2, I_3, \dots, I_m; P_1, P_2, P_3, \dots, P_n\}_1 \rightarrow \{P_k; \Delta\}_{i+1}$$

Yngve distinguishes between **inputs** and **properties** based on the former's status as observable characteristics of the environment and the latter's status as internal to the individual. At this point, it may be useful to distinguish between (a) what the analyst has to work with in terms of what can be observed, and (b) what the real inputs to a given participant's cognitive system are. We perceive only part of the world, and what we perceive, and what we do with it, is determined by the biology of our perceptual systems and what we have learned about our world. For purposes of describing what a particular individual does, the inputs are, in reality, whatever effects the environment triggers in that individual's perceptual system. If the analyst is observing a discussion between two people with red/green colorblindness, the distinction between red and green may not be relevant to the analysis at all—and, as I am typing this, whether the local incidence of neutrinos has increased cannot have the slightest bearing on my linguistic behavior, since I have no way of perceiving neutrinos. Crucially, however, this shift from in the real world to in the perceived world does not automatically give us license to make up any abstract unit we want; saying that someone reacted differently when hearing two complex sounds entitles us to say that there was some difference in those sounds' perceptual correlates, but not to say that they differed in a specific phoneme (they in fact may, or may not, but that's a separate issue).

If this shift to perception is accepted, then Yngve's state model for property shift can be recast as follows:

$$\{\Delta P_{x\dots x+n}; P_{y\dots y+n}\} \rightarrow \{P_k; \Delta\}_{i+1}$$

Or in less symbolic terms, changes in perceptual properties combine with pre-existent properties to give rise to a new property over time. In this view, the pre-existent properties that are relevant to the new property are within the interpretant, while changes in perceptual properties act as a signifier. Note that this approach raises the possibility of non-perceptual properties—for example, those arising as the result of earlier perceptual inputs—serving as inputs as well. Whether, or to what extent, the analyst could make detailed reference to these would be a methodological issue; Yngve's approach would suggest this be done as little as possible, as there are too few constraints on what can be posited about an unobservable property.

¹ Two points here. First, it is important to distinguish between 'underspecification' in this sense, and the sense in which it is sometimes used in, for example, treatments of vowel harmony systems. In the latter, some characteristics of a previous vowel (e.g. rounding and/or frontness) are carried over or anticipated, so that a smaller-than-usual set of vocal gestures need be specified; the harmonizing vowel does not have rounding or frontness features that override those already in place. The notion of 'already in place' does not hold for person/number marking, at least, not in all cases.

Second, the problems I am arguing exist in an underspecification account will be paralleled by areas of equal complexity in the ternary-sign approach; my goal is not to argue that underspecification is 'broken,' but to try to establish a valid and potentially interesting alternative. Whether the added complexity due to underspecification is better or worse than the added complexity of ternary signs depends on one's simplicity metric.

- ² I am not claiming that the treatment of ternary signs presented here is 'Peircean,' only that the notion of ternary signs is taken from Peirce. Any misuses to which I have put the notion are my own mistakes.
- ³ During the original presentation of this paper, I attempted to set up an analogy between the interpretant and what researchers in network models have called a 'vector'. On closer examination, however, there appears to be a crucial difference: I am referring to the sum total of activations that *facilitate* the activation of one node by another; 'vector' refers to the sum total of all nodes involved in an activation sequence.
- ⁴ Although simplicity is critical to the application of Occam's razor, there frequently exist multiple ways to compute it, as I have argued elsewhere. Choice of a *particular* simplicity metric is typically based on what the analyst chooses to view as being of primary importance.

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AN INTEGRATED GEOMETRIC DESCRIPTION OF POLISH ASPECT

WILLIAM J. SULLIVAN
UMCS / Uniwersytet Wrocławski
University of Florida (emeritus)

DAVID R. BOGDAN
Ehime University

THE SYSTEM OF POLISH ASPECT¹ described in Sullivan and Bogdan (2001:361, 2003a:300) is based on a solid analysis of derivational morphology. That description is summarized in **Figure 1** (overleaf).

Note that aspect in Polish may be either derived or iconic. Whether perfective or imperfective, iconic aspect is always unmarked relative to the semantics of a verb's Aktionsart. Iconic aspects communicate the *obščefaktičeskoe značenie* 'general factual meaning' of the verb (cf. Maslov 1959). Derived perfectives, whether derived from iconic imperfectives or iconic perfectives, are always markedly perfective relative to the verb's Aktionsart. Likewise, derived imperfectives, whether derived from iconic imperfectives or from iconic or derived perfectives, are always markedly imperfective. Moreover, aspect in Polish is not merely binary. The non-binary nature of aspect in Polish bears repeating. This means that it is wrong to define **the marked aspect** and let the other aspect simply be the unmarked aspect. That way lie the problems of other descriptions (see, for example, Forsyth 1970, Hopper 1978, and the commentary on various binary descriptions in Włodarczyk 1997). We must address both the semantics of *Aktionsart*, sometimes misleadingly called semantic aspect, and the semantics of each of the marked aspects in our description.

It goes without saying that the *Gesamtbedeutung(en)* or fundamental semantic meanings adduced for the marked aspects must be compatible with the semantics of the iconic aspects. Moreover, all of these must be compatible with the functions of aspect in discourse, as outlined in Sullivan and Bogdan (2001, 2003a and 2003b). The rate at which children acquire aspect without formal instruction suggests that the meaning(s) involve straightforward relations between the morphemes that communicate the marked aspects. But we can not infer from this that aspect is a simple binary system, even though it may begin that way in acquisition.

Moreover, there is another area that requires consideration. This is the cognitive understanding of aspect. That is, there are many ways something can be understood to be perfective (or imperfective) in different contexts, as shown in (1). Understand, the translations given in (1) are not meant as the ordinary interpretation of the imperfective-perfective pairs in isolation. Still, there are contexts where exactly these interpretations would be understood.

- (1) a. *je obiad* vs. *zjadł obiad*
'he's eating dinner' 'he's eaten dinner'

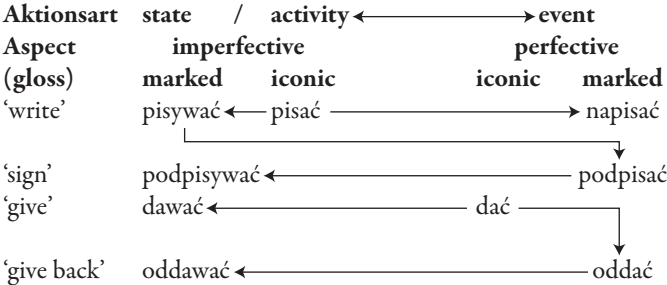


Figure 1. The system of aspect in Polish.

- | | | | |
|--------|--|-----|-------------------------------------|
| (1) b. | <i>palić papierosa</i> | | <i>zapalić papierosa</i> |
| | 'smoke a cigarette' | vs. | 'light up a cigarette' |
| c. | <i>budowali dom</i> | | <i>zbudowali dom</i> |
| | 'they were building a house' | vs. | 'they've built a house' |
| d. | <i>niszczą dom</i> | | <i>zniszczyli dom</i> |
| | 'they're destroying a house' | vs. | 'they've destroyed a house' |
| e. | <i>czytał Ogniem i mieczem</i> | | <i>przeczytał Ogniem i mieczem</i> |
| | 'he was reading <i>By Fire and Sword</i> ' | vs. | 'he read <i>By Fire and Sword</i> ' |
| f. | <i>czekał przez całą noc</i> | | <i>począł momentami</i> |
| | 'he waited the whole night' | vs. | 'he waited for a second' |
| g. | <i>codziennie kichałem</i> | | <i>kichnąłem raz</i> |
| | 'I used to sneeze every day' | vs. | 'I sneezed once' |
| h. | <i>zdawała egzamin</i> | | <i>jeszcze ma zdać</i> |
| | 'she took (failed) the exam' | vs. | 'she must still pass (it)' |
| i. | <i>Marysia wychodziła</i> | | <i>Marysia wyszła</i> |
| | 'Mary went (was going) out' | vs. | 'Mary went (has gone) out' |
| j. | <i>będę dzwonił</i> | | <i>zadzwonię jutro</i> |
| | 'I'll be calling (when unspecified)' | vs. | 'I'll call tomorrow' |
| k. | <i>będę przyjeżdżał</i> | | <i>przyjadę</i> |
| | 'I'll be coming' | vs. | '(I promise) I'll come' |
| l. | <i>będę się ubierała</i> | | <i>ubiorę się</i> |
| | 'I'll be getting dressed (sometime)' | vs. | 'I'll get dressed (soon)' |
| m. | <i>tu nie można palić</i> | | <i>tu nie można zapalić</i> |
| | 'smoking is not permitted here' | vs. | 'smoking is impossible here' |

Perhaps the most difficult part of defining the meaning of aspect, then, is providing a definition that is straight-forward enough to account for the rate of acquisition in children, yet general enough to account for the varied understandings of the aspects.

This is our immediate goal in the present study.

1. **ICONIC ASPECT.** We begin by considering the semantics of iconic aspect. Iconic here signifies a verb whose aspect reflects its Aktionsart. This is the aspect of simple verbs like *pisać* 'write (imprf)' and *strzelić* 'shoot, loose arrow (prf)'. To children, the notable fact about the semantics of acts is the difference between the instantaneous (or nearly so) and the rest (cf. 'Are we there yet, Daddy?' for any automobile journey of more than five minutes). This distinction starts being made manifest very early in speech and undergoes refinement for years. 'Are we there yet' becomes 'this is boring' long before the teens. Clearly, as any parent can testify, children wish more acts were instantaneous.² In addition to children's attitudes we have the fact that most verbs name activities which are or can be of indefinite length. It seems that basic, morphologically simple verbs communicating events are relatively few, a point borne out by a dictionary search. In short, both the reactions of children and the Jakobsonian treatment of markedness suggest that between the iconic aspects, perfective is (inherently) marked and imperfective is unmarked, i.e. lacking in any semantic mark for aspect. It is important to remember that neither simple imperfectives nor simple perfectives are morphologically marked for aspect in any way.

As a starting point, for the Gesamtbedeutung of perfective we propose the label **dynamic** for a situation that involves a change of state. That is, something in the state of the world as regards the act changes. Thus, in the instant it takes to shoot (*strzelić*), the hammer falls, the fulminate explodes the powder, and the bullet, which had been in the chamber, is gone. Iconic imperfectives are unmarked for dynamicity in the Jakobsonian sense: they are non-dynamic in that they say nothing with regard to change of state, rather than being [-dynamic]. They do not necessarily communicate a static situation. That is why (2) is a perfectly well-formed Polish sentence, semantically as well as syntactically. It need not imply that Sienkiewicz did not finish the novel or that he just worked on it for a while. Neither does it say he completed the novel, even if the year referred to is the year in which he did complete it. Interpreting the sentence in that way is possible because of pragmatic knowledge—our knowledge of history and Sienkiewicz and what can be bought from the shelves of bookstores. Taken out of context, native speakers would most likely give (2) a process interpretation. But the whole point of our work is that any description of aspect in Slavic must be compatible with both isolated and in-context usages.

- (2) *W tym roku Sienkiewicz pisał Ogniem i mieczem.*
'In that year Sienkiewicz wrote *By Fire and Sword*'.

In short, with regard to iconic aspect, our description basically agrees with Jakobson's understanding of his notion of markedness (Roman Jakobson, personal communication to WJS, in 1970). With marked aspects, it is a different story, and we diverge from Jakobson and others.

2. **MARKED ASPECTS.** It is our conclusion that derived perfectives and derived imperfectives are both marked. Yet the Gesamtbedeutung of derived perfectives must be compatible with that of iconic perfectives and must distinguish them from iconic imperfectives in the overall system. We consider the two marked aspects in turn.

Verb	Gloss	Aspect	Gesamtbedeutung	Remarks
<i>писаć</i>	write	iconic imprf	(none)	completely unmarked
<i>писywać</i>	write	derived imprf	static	
<i>napisać</i>	write	derived prf	dynamic	
<i>podpisać</i>	sign	derived prf	dynamic	
<i>podpisywać</i>	sign	derived imprf	static	
<i>dać</i>	give	iconic prf	(dynamic)	inherently dynamic
<i>dawać</i>	give	derived imprf	static	
<i>oddać</i>	give back	derived prf	dynamic	
<i>oddawać</i>	give back	derived imprf	static	

Table 1. Polish aspects and their Gesamtbedeutungen.

Our proposal is that derived perfectives, like iconic perfectives, are related to dynamic, again in the sense of change of state. Thus, they are not merely compatible with the Gesamtbedeutung of iconic aspects but identical to it. There is a difference, however. Derived perfectives are verbs whose semantic nature does not make them dynamic. Yet for communicative purposes, Polish is capable of looking at the dynamic aspect of the acts these verbs communicate in some way. Exactly what ways are possible (cf. (1)) depends partly on the meaning of the verb and partly on the point of view adopted by the speaker in context. We discuss this question in some detail in section 3.

Now consider derived imperfectives. Unlike iconic imperfectives, derived imperfectives are marked by a relationship to some meaning which is actively anti-dynamic. That is, it supersedes dynamicity in the verb, whether iconic or marked. We label the Gesamtbedeutung here **static**, i.e. there is no change of state. Again, for communicative purposes, Polish can look at static in more than one way. We discuss this in section 3 as well.

The semantic difference between simple-stem, non-derived iconic (completely unmarked) and derived (static) imperfectives is clear from **Table 1**. If the meaning of the verb communicates state, activity, or process, the Aktionsart determines an implicit and completely unmarked non-perfective aspect. This is tantamount to no specification of aspect; certainly there is no morpheme marking aspect. Conversely, derived imperfectives communicate a static modification of the meaning. It makes both non-dynamic and dynamic verbs static. Moreover, there is a logical difference between iconic and derived perfectives. Event Aktionsart implies perfective, whereas marked or derived perfective implies event Aktionsart imposed on and effectively replacing the unmarked imperfective which reflects state, activity, or process Aktionsart. That is, the polarity of the implication in the two perfectives is opposite, a logically significant difference.

The distribution of Gesamtbedeutungen suggests at least three aspects. This reflects our earlier discussion and suffices for our discourse analysis (cf. Sullivan & Bogdan 2001, 2003a, 2003b). But it is also compatible with a four-aspect (or 2×2 aspect) system. Choosing

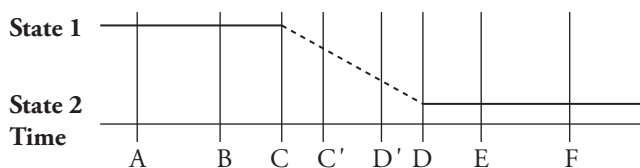


Figure 2. *The semantics of dynamic.*

between these analyses is not within our present scope, which is limited to the meaning of the aspects.

3. SEMIOTIC ANALYSIS AND SEMANTICS. Identifying a semiotic relationship between a class of morphemic forms and a Gesamtbedeutung seems to be a problem for some cognitive linguists. In fact, when given a situation that seems to call for more than one semantic field for a morpheme, some opt too quickly for polysemy.³ Polysemy is sometimes—perhaps often—necessary. But that does not make it everywhere incompatible with monosemic semiotic analysis. The conclusion of Lamb (1991) applies: sometimes both are necessary, and we must resist the temptation to adopt an either-or approach. His caveat applies directly to the current topic.

Different shades of aspect meaning can be identified on both the imperfective and perfective sides of the traditional dichotomy. Consider first marked imperfectives. There are two ways their static nature can be understood: having a single activity stretched out in time (duration) or repeating the activity (iteration). Unmarked imperfectives are also compatible with both durative and iterative adverbials, as in (3)a and b. We have already seen that they are compatible with ambiguous or non-specific situations, as in (2); again (2) does not say that Sienkiewicz completed the novel, but (2) is not falsified by our knowledge of the fact that he did.

- (3) a. *Czytałem przez całą noc.*
 'I read/was reading the whole night through.'
 b. *Czytałem to zdanie cztery razy, zanim je zrozumiałem.*
 'I read that sentence four times before I understood it.'

The combination of (2) and (3) leads us to infer three meanings of imperfective, i.e. three temporal scenarios that are compatible with verbs of imperfective aspect: iteration (dotted line), duration (solid line) and unspecified (pick any single point on the lines in **Figure 2**).

On the perfective side of the traditional dichotomy there are even more possible shades of meaning: inchoative, telic, time-limited, classic perfective, and semelfactive. These depend partly on context, whether linguistic or pragmatic, and partly on the semantics of the verb's meaning. We illustrate this in **Figure 2**.

In **Figure 2** points A and B are at different times during state 1 and points E and F are different times in state 2. Point C is the time at which state 1 ends and point D is when state 2 begins. The dashed slanting line between C and D represents the transition zone from state 1 to state 2. The transition zone can be anywhere from essentially vertical

(instantaneous) to nearly flat (taking a lifetime or more, like the transition from feudalism under the tsar via state feudalism under the Communists to a fully democratic state, which has not yet been achieved). Points C' and D' are points in the transition zone somewhere between C and D.

We begin with an understanding of dynamic as a change of state, i.e. from state 1 to state 2, at some point in time. The nature of states 1 and 2 depends on the lexical meaning of the verb. For example, in *dać* 'give' state 1 = it's mine, state 2 = it's yours. State 1 holds (solid line) for as long as I own it, state 2 begins when you own it. At point C I cease to own it. At point D your ownership begins. Again, the dotted slanting line connecting C and D indicates the time when state 1 no longer holds and when state 2 doesn't yet hold, representing the transition zone between states 1 and 2. In this case, it represents the actual time involved in transfer of ownership. The closer to the vertical this line is, the less time the transition between states actually requires. If WJS gives you his library at a rate of one book per day, the distance from C to D on the time line will be several years. But giving could take no time at all. SS, a one-time roommate of WJS's, came to return a tie he had borrowed. While loosening the knot of the tie he listed all the things he liked about it (color, pattern, material, weight), concluding with 'This is a really great tie!' As it happened, the things he liked were the things WJS hated about the tie, but he'd gotten it as a gift and felt constrained to wear it now and again. Upon hearing SS's enthusiastic description of the tie, WJS said, 'You like it? Keep it. It's yours.' The act of giving in this case was a decision in WJS's mind. No transfer of property was required \pm SS already had physical possession of the tie—only the decision and its articulation: maybe a second. If we consider the act of giving implicit in the decision itself, the time required was less than that.

We can argue that the semantics involving change of state for *dać* 'give' actually extends from B to E or even from A to F. This is a distinction without a difference, and we could even claim that it is from C to D only, which would be the limiting case.

Now *dać* 'give' is an iconic perfective. We can find marked perfectives that also exhibit classic perfectivity. For example, *przeczytać powieść* 'read a novel' extends from C (at the end of state 1, which is 'I have just opened page one') to D (at the beginning of state 2, which is marked by the event 'I've just read the last word on the last page'), and the length of the transition zone depends on the novel and the rate at which I read. We could move the initial point back to B, where I sit down and open the cover of the book for the first time, intending to read it. Similarly, we could move the final point to E, where I close the book for the last time, having gotten my \$29.95 worth of reading pleasure out of it. We could move the initial and final points out even further to A, where I lay out the \$29.95 plus tax for the book, and F, where I give it away to a friend. But again, all these distinctions make no difference. Each of them illustrates classic perfectivity.

A verb like *poczytać* 'read for a (short) while' is a somewhat different type of classic perfectivity. It potentially extends from C to D at its maximum, but its normal extent is less. Exactly how much less is not expressed in the verb. The connection of *poczytać* to states 1 (I haven't read any of it yet) and 2 (I've read all of it) are less immediate than for *przeczytać*, unless specified in prepositional phrases. With the appropriate prepositional phrase(s), *po*

perfectives reach *prze* perfectives as a limiting case: compare *pójść przez ulicę*, 'go across the street' with *przejsć ulicę* 'cross the street'.

A similar analysis can be extended to semelfactives. Semelfactives are not part of our overall study because of the problem with their aspectual status. Some, like *szarpnąć* 'give a pull', are perfective. Yet others, like *ciągnąć* 'give a pull' (a close lexical synonym of *szarpnąć*) are not, and it is not clear why. An extensive analysis focused on this class of verbs is needed, and it is complicated by the fact that native speakers do not always agree on the aspect of individual verbs in the class. The problem is that semelfactives like *szarpnąć* communicate that the activity *szarpać* 'pull' is performed exactly once. As such, they seem to parallel the time-limited perfectives in *po*. But they are not transition-zone verbs with *prze* verbs as a limiting case. The full explanation of their nature remains a mystery (but see the Bacz article in the present volume).

Leaving semelfactives aside, the normal time-limited perfectives are clearly related to classic perfectives. They are just not prototypically classic perfectives. But this is no reason for saying that they are not perfective. No more than for saying that penguins and ostriches are not birds.

Yet there are other possibilities. With the iconic perfective *strzelić* 'shoot (a gun), loose (an arrow)', state 1 includes drawing and holding the bowstring. State 1 ends at C, when the finger grip on the bowstring is loosed. The energy stored in the curved bow and the taut string do the rest. Thus the change of state here is simply the termination of state 1, and *strzelić* typifies classic telicity, an activity that comes to an end. Many marked perfectives also communicate classic telicity, e.g. *zniszczyć* 'destroy completely'.

Conversely, *stać się (idolem młodzieży)* 'become (an idol of youth)' focuses strictly on entry to state 2, here the new state of being an idol. D is that point at which the new state begins. This illustrates inchoative or inceptive perfectives with an iconic perfective. But there are also marked inchoative perfectives, e.g. *zapalić* 'light up (and start to smoke something)' or *zostać (inżynierem)* 'become (an engineer)'.

Finally, is *umrzeć* 'die' telic or inchoative? It seems to us to be compatible with either. The choice depends on whether the speaker is profiling the end of state 1 (A–C') or the beginning of state 2 (D'–E). McCawley's attempt at deconstructing meaning in the C-linguistic framework shows this clearly. He discussed deconstructing *kill* into telic 'cause to become not alive' before deciding to go with inchoative 'cause to become dead'. The former profiles A–C' (the end of living), the latter profiles D'–E (the beginning of death). A similar schizophrenia can be seen in the fixed collocations euphemizing or dysphemizing 'die': telic *pass away* and inchoative *assume room temperature*. The obvious answer is that either one is equally apt and depends on the speaker's profiling in communication. Both also apply in the physical world. The statutes concerning any kind of wrongful death profile the telic choice, but the parable about the seed falling to earth and dying to gain new life profiles the inchoative. In short, a verb like *umrzeć* 'die' or *zabić* 'kill' is not inherently one or the other. It is either one, at the speaker's choice. Again, see Lamb (1991).

We designate all perfectives as dynamic above, without saying exactly how the Gesamtbedeutung of dynamic can be characterized. In view of the findings of Bennett 1975 and Sullivan 1998 that the geometry of space as we perceive it is Euclidean and the geometry

of time is an extension (more properly a limitation) of Euclidean space, we look to geometry here and find a simple parallel: perfective involves at least one corner in **Figure 2**. For example, *napisać* 'write' involves C and *zapalić* 'ignite' involves D. With some verbs it may involve both corners, as with *przejsić* 'cross' and *przeczytać* 'read from cover to cover'. It may also be restricted to some time in the transition zone, in which case it may involve both corners as the limiting case. And finally, it may involve either corner depending on the profiling, as with *umrzeć* 'die'.

This illustrates what happens with perfectives. Now consider imperfectives. Unmarked or iconic imperfectives are not inherently limited to a particular part of this system. They may be placed on a state line like points A or F implicitly, by context, or explicitly, by temporal expressions, but they need not be (cf. [2] and [3]). Marked imperfectives, conversely, are static. They may be activities extending in time by their very nature (i.e. A–B or A and B as with unmarked imperfectives like *czytać* 'read' in [3]) or by the nature of the task, as in (4).

- (4) *Pisuję te wyniki (laboratoryjne) codziennie, przez cały dzień.*⁴
 'I write these (laboratory) results every day, the whole day through.'

Note that the adverbials in (4) make the imperfective activity simultaneously iterative (*codziennie* 'every day') and durative (*przez cały dzień* 'the whole day through'). The choice of the marked imperfective *pisywać* derived from the iconic imperfective *pisać*, both with the lexical meaning 'write', is also significant here. It is in fact redundant, but it emphasizes the fact that no unmarked and possibly ambiguous interpretation of *pisać* is to be understood. Whether a marked imperfective is interpreted iteratively or duratively makes no difference. Either way, only a single state is involved and no corners are turned.

Figure 2 also accounts for the more mysterious uses of aspect that are beyond the scope of the present study. For example, it provides a description of the actual distribution of aspect in imperatives, i.e. the supposed complementary distribution of aspects in imperative constructions such that negative imperatives require an imperfective and positive imperatives require a perfective. It also predicts the cases of supposed aspect neutralization. With verbs like *fascynować* / *zafascynować* 'fascinate' you can communicate that you were fascinated by a movie with either past perfective or present imperfective (*mnie fascynuje* / *zafascynował ten film*).

4. DISCUSSION. Assuming we accept Młynarczyk's (2004) conclusion that all verbal prefixes are perfectivizing⁵ (in the absence of an imperfectivizing suffix), we have the verbal prefix (or set of prefixes) as a linguistic realization of marked dynamicity. Its actual form, i.e. which prefix appears, depends on other factors, e.g. the meaning of the verb and its combination with the geometric meaning of the prefix. At the same time we have just shown that dynamic has a number of potential interpretations. This seems like a classic case of polysemy: one realization for many meanings. Still, our understanding is that classical polysemy involves an upward OR relationship within the linguistic system itself. So the [wɛl] that is a hole in the ground with water or oil at the bottom and the adverb are polysemous, just

like *big* 'large' and *big* 'older'. Yet the different interpretations of dynamic are found not in a purely linguistic context, but in semantic ones. Moreover, in those contexts they are in a sense calculable: what corner of **Figure 2** is turned and when it is turned can be approximated from the semantic meaning, which defines the two states.

We do not, however, claim that **Figure 2** is a cognitive reality for all native speakers. Such a claim would require empirical validation of sorts that we have not even contemplated. Still, the apparent ease and rapidity with which children acquiring Polish gain control over all types of aspect suggests that it must be something of this degree of simplicity. **Figure 2** shows that it is possible to combine all the kinds of Polish imperfectivity and perfectivity in a single conceptual basis. Informal tests with native speakers of Polish suggest that few if any ever stop to figure out the different implications of aspect and we have yet to meet one who could explain it to a non-native speaker. But just knowing that there is some kind of change of state is enough to trigger one of the particular understandings of perfective in (1) or **Figure 2** in a given lexical and discourse context. These understandings are also inferential but nonetheless significant for the listener, and maybe the speaker, too. Yet the same informal tests of native speakers suggest that they find **Figure 2** a reasonable summary and symbolization of what aspect means to them. Perhaps it is like the number of syllables in a lexeme. The information is nowhere stored explicitly, but a native speaker can pronounce the lexeme, count the syllabic cycles, and come to a number. The information is implicit in the relations of the lexeme to the linguistic network and is recoverable. Other than poets, very few people are ever aware of the number of syllables they articulate as they say something. Jakobson used to say that there are things about semantics that are reminiscent of phonology. Perhaps this is one of them.

5. CONCLUSION. Aspect in Polish is not merely binary, it is at least ternary. Perfective aspect, whether iconic or derived, communicates a change of state in some way, understood as involving at least one corner in the geometric construct in **Figure 2**. Marked imperfectives are static in some way, whether through repetition (iterative) or extension in time (durative). Iconic imperfectives, however, are not necessarily static. They simply say nothing with reference to a change of state. They are the truly unmarked aspect in Jakobson's sense, but they are only one of three aspects in our system.

¹ Many thanks go to the discussants at the thirty-third LACUS Forum, especially Robert Orr (from a Russian perspective and Alina Israeli, whom he suggested I contact for extended discussion and who kindly supplied me with a copy of Israeli 1996) and most especially Barbara Bacz of Université Laval, whose careful reading and extensive discussion provided a number of improvements in addition to catching a number of infelicities and other shortcomings, which are always a danger in a paper excerpted from a larger work that is still in progress.

² But not all of them. 'Already?' for an activity that must be cut short is most often heard after the word 'Bedtime!' Irrespective of the activity.

³ Cf. G. Lakoff on English prepositions.

- ⁴ A comment made to WJS by a Polish MD now working in an evaluative and administrative capacity, rather than a medical one. Whether he was trying to impress WJS with the difficulty of his present work or whether he was looking for sympathy was not clear.
- ⁵ Młynarczyk apparently believes that some prefixes are empty, except for their perfectivizing function. We do not. We hypothesize that the prefixes retain their geometric significance, which is evident in their pronominal usages. But some of them are geometrically unmarked or even redundant vis-à-vis the verb semantics, giving them the appearance of being empty.

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DOMAIN CONFUSION

BERNARD SYPNIEWSKI
Rowan University, Camden

HARD SCIENCE LINGUISTICS¹ (HSL, see Yngve 1996) is motivated by a realization that is at once simple and profound: we must focus on the physical domain. Many intellectual pursuits, linguistics among them, are subject to domain confusion. For the purposes of this paper, a domain is an area of study or intellectual interest, usually, but not always, ordered or structured in some way. Yngve 1996 breaks the study of domains into two large categories called the physical domain and the logical domain. These two terms refer not to the disciplines of physics and logic but rather to general ways of studying anything. One might think of the physical domain as including the entire real world with its objects² subject to various forms of physical tests. The logical domain is the domain of pure theory often unconnected to the real world. It might be easier to think of what HSL calls the logical domain as the theoretical domain. The logical domain consists of the study of intellectual objects which are not subject to the same sorts of tests as are the objects in the physical domain. HSL uses the terms physical domain and logical domain as convenient ways of referring to scientific studies of real world objects (the physical domain) and philosophical studies of theoretical objects (the logical domain).

HSL does not object to theories or theorizing. Insofar as theories are formed to describe how some portion of the real world works by simplifying and testing sets of similar observations, they are perfectly acceptable and useful. Domain confusion does not occur because we create theories. Domain confusion occurs because we create theories about the wrong things. More specifically, domain confusion occurs when a theoretical object is studied as though it were a real world object. We may conveniently use theories to tell us what the real world is like; however, we must keep in mind that neither theories nor theoretical objects are real in the sense that physical domain objects are real.

Linguistics is full of such confusion, although it is not the only discipline in which domain confusion occurs. The notion of domain confusion is a general notion rather than one specifically found in linguistics. Domain confusion can occur in any discipline at any time, especially when theories have a lengthy history. For example, talking about and studying the economy confuses a theoretical object (the economy) with real world objects (people creating or providing goods and services). One might say that talking as though theoretical objects were real does no harm and is merely a shorthand way of expressing complex ideas. In many cases this is so but not in all cases. The greatest danger created by domain confusion is the danger that domain confusion will not be noticed. This danger is quite severe for linguistics. The remainder of this paper briefly notes some aspects of domain confusion in our discipline. Many of our comments have already been made in other papers or at other conferences. They have often met with anger, lack of acceptance or

misunderstanding. Many linguists new to HSL might think that by noting domain confusion, HSL researchers are merely saying our school of linguistics is preferable to yours. This is not the case. Domain confusion is not a preferred term which masks some more traditional linguistic concern. HSL developed as an attempt to reconstitute linguistics because domain confusion exists and because it is pernicious.

Before proceeding further, we should note that logic and other philosophical disciplines have long noted a problem related to but not identical with domain confusion: **reification**. Reification or **hypostatization** treats a theoretical object as if were a real, concrete thing. By unconsciously reifying a theoretical object, researchers are led into making unsound arguments when they claim that manipulations that are only possible on real world objects are performable on a concept or that a concept developed to explain a portion of the real world has no relation to the concrete things which it was intended to describe. Domain confusion is not the same problem as reification. Reification refers to confusing a theoretical object with a real world object. Domain confusion is the problem of creating theories from discussions and analyses of theoretical (often reified) objects rather than creating theories based on observations and tests of real world objects. But this is only a first step. Domain confusion then treats the theory created from theoretical objects as though it were created from observations and tests of real world objects. Abstractions are intellectual conveniences. By simplifying our observations of a complex world, we hope to understand parts of that world more easily. No matter how well our abstractions are created, the abstractions are never the physical equivalent of the real world objects that were initially studied. To be useful, no abstraction can be as complex as the real world objects from which it is derived. Any analysis of the abstraction rather than the real world objects on which it is based runs the risk of inaccurately claiming that a feature of the abstraction is a feature of the real world object or that a real world object lacks a certain feature because its abstraction lacks it. By accumulating abstractions into a system, we run the risk of compounding those inaccuracies into an inaccurate system. Furthermore, to make theoretical systems more accurate, researchers might invent theoretical objects for which no real world equivalent exists.

Researchers almost always acknowledge that their theories are inaccurate to some degree. The inaccuracy is not the problem that the term domain confusion is meant to indicate. The problem that is noted by the term domain confusion is the problem of how these inaccuracies are created, spotted and corrected. For several hundred years, scientists, i.e. researchers using certain methods of study, have relied on several assumptions to determine the reliability of their theories. The most important assumption has been that if a theory about the real world leads to results independently reproducible by several scientists, that theory is more likely to be an accurate description of the real world than one that does not lead to reproducible results. As is well known, real world objects can be subjected to various kinds of tests, depending on the object. These tests are themselves testable. A test which produces accurate results is usable in scientific inquiry; one that does not is unusable.

This brief review of the scientific method points to an important feature of scientific research: the question of the accuracy of a theory is answerable. It is answerable because all tests are or can be performed on real world objects. In the logical domain, where the objects of study are theoretical, there is no answerable question of the accuracy of a theory because

there is nothing to test. In short, logical domain theories are more or less acceptable but are never accurate. Logical domain theories may contain hundreds of theoretical objects. Each of those abstractions may or may not accurately represent some real world object or may reflect some theoretical concern which is not part of the real world. There is no objective way of determining whether these theoretical objects actually do represent real world objects, if that is what they claim to do, or whether they result from reifications. Reified objects may have a long history.

1. AN EXAMPLE OF DOMAIN CONFUSION. Lyons (1981:239) contains a brief, useful history of the linguistic theory of universal grammar. He notes

Common sense and introspection support the view that thought is a kind of inner speech; and various more sophisticated versions of this view have been put forward, over the centuries, by philosophers. In fact, throughout most of the 2000 years or so during which Western traditional grammar held sway in the various centres of scholarship, no clear distinction was drawn, at the theoretical level, between grammar and logic. In particular periods – most notably in the thirteenth century and again in the eighteenth – systems of what came to be called **universal grammar** were developed, in which the connection between logic and grammar was made explicit and given some kind of philosophical justification. In all such cases it was grammar that was subordinated to logic, since the principles of logic were held to be of universal validity (emphasis in the original).

Lyons further points out that by the nineteenth century, questions about the validity of these views arose. The notion of universal grammar went out of fashion. As we know, it was revived by Noam Chomsky and his followers. Rather than linking grammar to logic, the generativists have linked language to mind.

This paper does not discuss the validity of the notion of universal grammar except to note that it is not a scientific notion, despite the claims of Chomsky and his followers. It is important to note that the terms language, grammar, logic, and mind are themselves abstractions. They are the names of theories which are composed of the study of the interactions between other theoretical objects. Note one important but usually overlooked fact in the quote from Lyons above. In some sense, linguists and those who have studied language have debated the existence of universal grammar or something like it for over 2000 years without having conclusively determining whether, in fact, there is such a thing as universal grammar. The reason for this failure is because of the domain confusion inherent in this question. In order to examine the question, one must assume that certain other theoretical objects and systems exist and interact with one another. One must assume that there is something called language which is structured in a way that is called a grammar and that, since logic—the assumption that thought can be systematized, categorized and, therefore, studied in certain ways (reducing thought to a rule-based system)—is a

similar system, grammar acts in systematized, rule-based ways like logic. Logic is rule-based because thought is internal language, which is rule-based because it has a grammar, which follows certain rules because it is like logic. None of these assumptions can be scientifically tested. There is nothing to test. Notice the appeals to common sense and introspection in the quote above.

HSL talks about people communicating. There is no question that people communicate through sounds and other systems. HSL does not deny that these sounds have a physical reality to them. HSL does say that there is no scientific proof that there is a system of rules called a grammar that can be studied scientifically. HSL may be wrong. There may be some way to create a test to determine the existence of grammar. In the last few years, neurobiologists have decoded the human genome. We can plausibly assume that if there is such a thing as grammar that is part of the human body (in the brain, for instance), it would be encoded in our genes. If this is the case, grammar would then be part of the human genome. The genome is a real world object and can be studied as such. If grammar genes can be identified by whatever means geneticists use, the expression of those genes can be tested to determine their real world effects. We do not formulate a precise test here but merely discuss the possibility that such a test can be created to distinguish between what we claim to be a domain confusion in the theory of universal grammar and a proper scientific analysis of the basis of human communication. A study in the physical domain would concentrate on real world objects: the human genome, the generation of certain types of sound by the human body, etc., rather than upon scientifically unfounded abstractions such as grammar and language. An HSL analysis of the problem would not begin with assumptions like grammar and language and claims that, since there are such things as grammar and language, they must have a genetic basis; HSL would ask what the genetic bases for certain observation in the real world might be. Rather than speculating on the theoretical structure of theoretical objects, we ask about how certain parts of the real world interact with other parts of the real world. HSL researchers would not ask: where, in the human genome, is grammar but rather: what in the human genome is linguistically relevant.

The questions that HSL researchers ask are different than those asked by researchers from traditional linguistics backgrounds. Preventing domain confusion demands as much. The questions are dictated by the real world objects being studied and not by the theory one might espouse. For example, an HSL researcher would not ask how or whether grammar is encoded in the genome because the question assumes the reality of grammar which HSL researchers have no reason to believe is a real-world object. HSL researchers may be concerned with the influence our genes might have on the way that we humans communicate with each other. The questions that result from this concern must be carefully formulated in order to exclude the possibility of domain confusion. The researcher would use the realities discovered by geneticists and other scientists on one hand and the observations of human behavior by other scientists on the other in order to formulate their questions. None of the questions would include the mention of theoretical objects like morphemes, syntax, or grammar. Note that HSL researchers are not limited by linguistic theories in their studies, as this example shows. They can easily use the finding of scientists from other fields

as part of HSL studies. This is possible because HSL studies use as their basis the same type of object that other scientists study: real world objects.

Recognizing that domain confusion exists in linguistics and correcting it achieves more than correcting a theoretical problem. By correcting the domain confusion inherent in linguistics, as HSL attempts to do, linguistics can become a genuine science. Rather than existing in a theoretical world unrelated to other theoretical worlds, linguistics becomes a snapshot of a certain portion of reality—the reality of people communicating with each other. The first step along this path is to ask whether the object of study is a real one. What is being studied? Even though many linguistic objects have a long history, it is always worthwhile to ask what is *x*, where *x* is the linguistic object to be studied. Ask what is a sign? or What is meaning? The answers to those questions must involve some physical (though not necessarily tangible) aspect of reality. If it does not, the object is theoretical not a real world object. If it is theoretical, the object cannot be studied scientifically. If we do find an underlying, physical reality, we can study it scientifically. We can describe it, we can model it; but it is the reality that we must study, not the model of that reality.

2. CONCLUSION. The problem noted in this paper is not a matter of preference for one way of asking a question as opposed to another. HSL researchers wish to be scientific and get reliable answers to well-formed questions. If HSL researchers stayed in the logical domain, they could not reach their goals. The nature of logical domain questions and objects is such that no definitive answer can ever be offered to a logical domain question. To see that this is so, simply ask why the issue of universal grammar has not been settled for over 2000 years. The question has been studied by intelligent people; it is not for lack of brain power that there is no definitive answer to the question. It is not from lack of material for study. The universal grammar question has not been resolved because of the nature of the question. The confusion inherent in the question makes the question irresolvable.

For linguistics to have the sound, scientific basis which it seeks, it will have to restructure its programs of inquiry. Yngve 1996 and several papers in Yngve and Wąsik 2004 mention the benefits of switching to physical domain approaches; they will not be repeated here. Shifting from the theoretical domain in which most traditional linguistic studies are mired to the sound, physical domain pioneered by HSL researchers will not be without difficulty. Reformulating the basis of our studies has proven difficult. Such a reformulation can be done and it is worth the doing. To a large degree, linguistics will have to be begun anew.

Recall that, while we use linguistic examples in this paper, as is appropriate for a linguistics conference, we do not exclusively limit our comments about domain confusion to linguistics. The problem exists in many fields. Having identified the problem in linguistics, there is no excuse now for linguists to be confused.

¹ I wish to express my appreciation to Victor Yngve and Douglas Coleman for their kind discussions about this topic.

- ² When we use the term *object* in reference to the physical domain, we do not mean to limit the discussion to things. We use object to refer to anything which is under investigation, whether it be a thing, a process, or any other part of the real world.

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FURTHER REWARDS FROM FORMALIZING THE OBSERVER

VICTOR H. YNGVE
University of Chicago

LARA BURAZER
University of Ljubljana

FERDINAND DE SAUSSURE, on page 7 of the Wade Baskin translation, says of linguistics:

But it is evident... that linguistic questions interest all who work with texts —historians, philologists, etc. Still more obvious is the importance of linguistics to general culture: in the lives of individuals and societies, speech is more important than anything else... But—and this is a paradoxical consequence of the interest that is fixed on linguistics—there is no other field in which so many absurd notions, prejudices, mirages, and fictions have sprung up. From the psychological viewpoint these errors are of interest, but the task of the linguist is, above all else, to condemn them and to dispel them as best he can.

One can certainly agree with Saussure about the many absurd notions, prejudices, mirages, and fictions that have sprung up in linguistics. They are still there ninety years later and they are still indefensible.

But if we are to condemn these errors and dispel them, we have to know what they are. Many of them have been hidden even from linguists, or even when exposed, purposefully ignored as convenient fictions, creating a scandal, which has then also been purposefully ignored.

So in hard-science linguistics we continue to hope that linguists, if given defensible alternatives, will take their blinders off and open their eyes. We continue patiently to expose and correct the deep-rooted absurd notion that linguistics should be the study of language, whatever that is, which cannot be a science. It should instead be the study of real-world people and how they communicate with sound waves, gestures and in many other real-world ways. This can actually be a proper standard science, which we are gradually developing in hard-science linguistics in the hope that through science we can finally rid linguistics of its many absurd notions, prejudices, mirages, and fictions, which we deservedly call nonsense here, meaning no disrespect to well-meaning linguists who would also wish to get rid of them.

Another prejudice that we have been trying to expose in human linguistics is the focus of theory first on speaking, on speech sounds and how they are produced by a speaker in the vocal tract, and only later if at all on hearing and understanding. But, as Saussure indicates in his famous diagram of the speaking circuit, it takes both and they are equally important. Yet we still ask a mother to tell us at what age her child learned to talk, not learned to hear and understand.

Hearing and understanding actually came first in the evolution of the species and it comes first in the development of the child. So we have corrected this prejudice of long

standing by placing hearing and understanding first in hard-science phonetics-phonology (Yngve 2004b). And we have been rewarded in this by new insights.

1. TASKS: THE CASE OF SUZY. I (Yngve) stumbled on this error many decades ago, shortly after coming to MIT from Chicago but at that time I didn't yet know what to make of it and was quite mystified. We were visiting Bob, the best man at our wedding. Bob had a young daughter, of whom he said, 'She doesn't talk yet, but she understands everything.'

Bob, as a layman in linguistics, but with scientific training in chemistry, was way ahead of me in this. I, who had been reading a lot of linguistics, was still laboring under the traditional prejudice of giving first place to speaking. So I was surprised and asked, 'If she can't talk, how do you know?'

'Watch,' he said as he crumpled up a piece of paper and gave it to the child. 'Here Suzy, put this in the fireplace.' The child took the paper and put it in the fireplace.

Here we have a simple example of Bob giving his daughter a task. Two people are involved, Bob and his daughter. What can we learn from it?

The topic of this paper is analyzing dialog and the influence of the third person in conversation. Three people. Our aim is to find out how to formalize this in hard-science linguistics. We'll try to sneak up on it a bit at a time and see how far we can get.

What is it for someone to give someone else a task? Two people are involved.

This question had come up earlier in trying to analyze the results of an experiment, the conversation of Frank and Penny videotaped and reported in Yngve (1970), reported in the Vance dissertation, and again in Yngve (1996).

Frank and Penny are introduced for the first time on camera. They had earlier been given the tasks, separately, of getting acquainted with each other. We wanted to find out how their commonality of properties would build up as they got acquainted and thus to find out something about communicating.

Note: We now have three people, Frank and Penny, and the experimenter, who first gives them the tasks separately of getting acquainted and who later introduces them to each other on camera.

How can we formalize giving people tasks they know how to do? Frank and Penny already knew how to get acquainted, a matter of their general knowledge. Knowing how to do the task is important. In the case of Suzy we don't know how the task is broken down, that is, could Suzy handle modifications like being asked to put the paper on the desk or in the wastebasket? Probably, and I seem to recall after all those years that Bob had also described that to me.

It's clear that some things are recognized by how they sound, like 'Suzy'. Even dogs can do that, but kids are busy building up an extensive recognition vocabulary. For Suzy apparently also at least 'put this', 'fireplace', 'desk', and 'wastebasket', as demonstrated by Bob in his little experiment.

We began developing formal methods in hard-science linguistics with the children's playground game of tag. Is tagging a child like giving the child the task of doing what children do when playing tag and are 'it'? If so, giving someone a task he knows how to carry out is not much more than what we can already handle in tagging.

I am going over this example again here because it is absolutely basic for the understanding of hard-science linguistics. It treats an elementary communicative act, the simplest I could think of. Incidentally, this formulation of a simple communicative act was inspired by the emission and absorption of a quantum of energy familiar in elementary physics, but we can't just take that theory over intact.

For children playing tag, they each have the property <pt> (playing tag). So if [A] and [B] are the role parts of two of the children and [A] has the property <it>, for [A] to tag [B] we have:

[A]<pt><it> + [B]<pt><-it> + [A]<touch>(B)
:: [A]<-it> + [B]<it>

which means 'A "playing tag" and "it" and B "playing tag" and "not it", and A "touches" (or tags) B sets A to "not it" and B to "it"',²

Here A gives B the task of being 'it' in the game they are both playing in.

So giving someone a task requires that the person know how to execute such a task and how to understand being given the task. The children have to know, as part of knowing how to play tag, how a simple touch of a person who is 'not it' by a person who is 'it' is understood by them both as causing the one touched to become 'it' and the one who touches to become 'not it'. That is, it is understood as an instance of tagging. This is an elementary communicative act understood only in context, the context of the children playing tag.

For the Suzy example, we have the role parts [child] and [adult], taken by Suzy and Bob. And we have the prop parts: [paper] and [fireplace].

We need to take turn-taking into account. First Bob says 'Here, Suzy' and holds out the paper to her. Then Bob says 'put this in the fireplace'. We have:

[Suzy] + [Bob]<emit sound of 'put this in the fireplace'>
:: [Bob] + [Suzy]<understand 'put this in the fireplace'>
[Suzy]<takes paper><puts paper in fireplace>

So we can give the [Suzy] role part a property <fp> (focus on paper), replacing its initial <-fp> (not focus on paper) property. This is a property of the child role part in this linkage. It is different from her being aware of the paper <ap> in some other linkage. Thus it is equivalent to her having been referred to the paper by Bob, not just generally aware of it, which she may have been before. So it is her focus on the paper. The Bob [adult] role part is also aware of the paper and focuses on it, but this does not change in him.

So, how does someone give someone else a task? In an appropriate interaction just communicate it to them.

In the tag example, while playing tag, interactions of tagging are expected, so just communicate it to them by touching them is enough to set the task, and we have this in our theory by the tagging procedure that results in the tagged child becoming <it>. In the Suzy example, in an interaction between father and child, just tell it to her. After getting her attention and holding out the paper to her, he just tells her 'Put this in the fireplace'. We had:

[Suzy] + [Bob]<emit sound of 'put this in the fireplace'>
 :: [Bob] + [Suzy]<understand 'put this in the fireplace'>

This gives her a task, which she then carries out.

2. FRANK AND PENNY. We now turn to the Frank and Penny videotaped dialog of 1970. The published reports (Yngve 1970, 1996; Vance 1974) presented data and preliminary conclusions. We now push on a bit further to see whether we can formalize significantly more of it in a scientifically justified HSL theory and notation.

The purpose of this experiment was to discover and describe the details of plex structure, at that early date called 'state of mind' (Yngve 1969), and to relate it to observable communicative behavior and thus to achieve agreement in linguistics through science.

This was my first attempt at videotaping an interaction for close study. It was before sophisticated video equipment was easily available, so a split-screen effect was produced by a pair of front-surface plate glass mirrors mounted at an angle to each other on the table between the subjects, as detailed in the 1970 report.

One of the most obvious characteristics of dialog is that the two conversationalists appear to be taking turns. First, one has the turn, and then the other has the turn. We postulated that there were turn variables in their plex structures. The experiment was to try to discover how their changes could be related to what the conversationalists were observed to be doing.

The 1970 report of this work at CLS was the paper that introduced the term 'back channel' into the literature, which is associated with occasions where it appears that a person is speaking out of turn.

After 35 years, HSL theory and its developed notation has now advanced to the point where we can consider this material a bit further to see whether we can learn anything more from it.

The subjects were chosen from young adults connected with the University of Chicago who had some college level or graduate training. The first dialog involved a male and a female subject who had not met prior to the experiment. The subjects had been chosen to be matched in conversational ability so as to produce a dialog with plenty of give and take.

Each subject was told that the other subject was a member of the University community whom he had not met. He was to pretend that they had met by chance while traveling and learned that they were both from Chicago. Their task was to get acquainted. The session was one hour in duration. The resulting dialog was animated and interesting. The subjects reported that they had enjoyed the conversation.

So the subjects were given the tasks of getting acquainted simply by communicating the tasks to them in appropriate interactions with the experimenter.

The preliminary results reported in 1970 still stand, some of them may seem surprising even today, especially to those who have never tried to analyze videotaped material. A mirage that should be added to the list with which we started is that turns change in a regular way in a dialog with no overlap or interruptions, as is frequently the impression one gets from a novel, play, movie, or TV drama, or even from an ordinary reported conversation

('And he said... and she said,') There is nothing like viewing videotapes of actual conversations to dispel any false preconceptions one may have.

So I was surprised in the beginning when a student reported that he had observed simultaneous talk and no clear turns in a bar. Not being a bar person, my preconceptions made it hard for me to believe him.

Today, one could analyze stretches of videotaped conversation showing simultaneous talk in terms of expectation procedures in the linkage plex involving turn changes with which ongoing actual turn behavior can be compared in the plex and to which significance might sometimes be attached.

The conversationalists have the joint task of getting acquainted. We analyze this as follows:

[subjects] <get acquainted> =
<Penny's story> + <Frank's story>

I have used a + here to indicate that these are simultaneous linkage tasks of getting acquainted (as the evidence showed). Although these tasks are unordered, each is 'owned' by one of the subjects, as <Penny's story> and <Frank's story>. Vance showed that this aspect of ownership exhibits the phenomena of turn-taking. The notation for the first pair of turns, (if Penny goes first) is:

<Penny's story> -> <Frank's story>.

Penny says, 'Should I start then?', and Frank replies, 'You start.'

Start what? Their joint task split into the two parallel tasks of <Penny's story> and <Frank's story>.

In considering how to carry the analysis further it became clear that the conversationalists sometimes talk about the procedures and tasks they are carrying out. We need a formal means of naming tasks.

We already have a notation for naming systems. We have:

[child]<name/Butch>

Could we simply carry over this notation to names of procedures and tasks? If so, we would have in the Rules of Order paper (Yngve 2004a), which analyzed the convening of a meeting regulated by Robert's Rules of Order (e.g. Robert 1990):

<convene>/<name/convene>

and in the case of a misunderstanding about who is 'it', as in a paper showing the role of the observer (Yngve 2005):

[O]<[L]<mis> = <[A]<[A]<it> x [B]<-it>> x [B]<[A]<-it> x [B]<it>> > >

we would have:

[O]<[L]<mis>/<name/'misunderstanding'>>

Note that there are three people here. The third is necessary as an observer in which orthoconcepts¹ form.

There is still much more to be learned about naming tasks. With data like that from the Frank and Penny tape this will get us into a fairly large part of English that we have to learn about and get the full story of and exhibit the evidence for. But the needed evidence is readily available because people are observed to talk about these things and are understood. And, as they say, 'talk is cheap'.

And after all, kids learn to hear and understand on the basis of a number of different examples, often embedded in real-world contexts. Our progress will be slow and steady, but we can report advances as we discover them along the way.

In the linkage task <Penny's story>, it is Penny who takes the lead in telling about herself. Evidence for this is that she asks 'should I start?' and he answers 'You start'. So 'start' refers to starting the task of getting acquainted with the simultaneous parallel task <Penny's story>.

Is 'start' a task? It seems not to be a task but about a task. How can we understand this?

3. CONCLUSION. In this paper we have been able to set aside some of the stubbornly enduring fictions and illusions in linguistics mentioned by Saussure nearly a century ago. We have moved a bit further in our effort to show that linguistics need not continue to be a study of language, which cannot be a science, but how it can instead be a properly scientific study of real-world people and how they communicate.

We have overturned conventional wisdom with the help of Bob and his small daughter Suzy by providing evidence that hearing comes before speaking in learning to communicate. And we looked a bit at building a recognition vocabulary.

We have examined what it is for someone to give someone a task—in the example of tag, for Suzy putting the paper in the fireplace, and for Frank and Penny getting acquainted. And everywhere the important role of the context was formalized.

We have discussed parallel and simultaneous tasks with Frank's and Penny's stories, and various kinds of turn-taking and interruptions.

We have analyzed dialog and the influence of the third person in conversation and in the formation of orthoconcepts, and we have examined elementary referring in tag and to the paper and the fireplace by Bob.

And in all this was the clear importance of studying the real world rather than the usual assumed abstractions and myths, whether called language or not, and the importance of striving to make linguistics a hard science and at the same time the importance of formalizing the observer.

4. THE GIFT OF STANDARD SCIENCE. Linguistics has long been plagued by a multitude of approaches to various things called language. It has been usual to develop new approaches

by taking existing approaches, none of which has ever been scientifically justified, and installing in them new names and technical terms and notation here and there, or throughout, so they look new. But if they were not scientifically justified before, they are still not scientifically justified in their new clothing, even though some new references to the real world or to some real-world scientific discipline have been added.

LACUS gives us freedom to do this without provoking strong objections at meetings because everyone in LACUS is free to talk and publish what I have called nonsense as long as it appears to be a legitimate approach, and one will usually not be openly criticized for it. There seems to be a tacit agreement: If you'll let me talk nonsense, I'll let you talk nonsense.

But freedom comes at a price. It seems to me that the price of the freedom not to be negatively criticized by one's colleagues at LACUS when one talks nonsense has to be that each one of us take personal responsibility to bend our every effort not to talk or write or publish nonsense in the first place.

Nobody wants to write nonsense. But that has been difficult for us. With no omniscient guru to follow and no strong check from the community, how can one decide for oneself whether what one has written is nonsense or not? Linguistics, being a soft science, has had no agreed-upon criteria. Anything goes. Just look at all those approaches. Hundreds of them, all different, and I do not exaggerate.

This gets to the very heart of why some of us have been working night and day to develop a proper hard-science linguistics which, being a part of standard science, can provide for our use the standard time-tested assumptions and criteria of all science. Linguistics has needed this.

The price we pay for being able to use this standard way of distinguishing sense from nonsense is for linguistics to become a standard science. Yet we gladly pay this price, for linguistics has long aspired to become a science. But we need to actually accept science. There is no other way.

It is now clear that accepting science means relinquishing the ancient study of language, whatever that is, in favor of studying real people in the real physical world. Only when studying the real world does one have a chance of developing a true science because only in the real world is it possible to test one's theories using the standard time-tested criteria of science. That should be easily acceptable. A no brainer, as they say.

It should be clear that this is not to be taken as just another approach, which is the knee-jerk reaction to anything that appears new in linguistics, although HSL is not all that new. HSL is not just our way of doing linguistics. We have no patent on science. Science belongs to each of you and to everyone in LACUS and to everyone else. So it is legitimately your way as well.

This is the way bequeathed to us all by Galileo and his contemporaries in the seventeenth century (see Drake 1957). A magnificent gift to humanity. We need only accept this precious gift and use it in our linguistic research. Please join us in accepting this gift freely, explicitly, and gracefully. And by using the methods of standard science please help us to identify the nonsense still remaining in linguistics and to get rid of it.

If you stop to think about it, we all do tacitly accept science every day when we accept the many benefits still accruing from the science pioneered in the seventeenth century,

sometimes at great personal cost, when we drive a car, turn on a light, use a telephone, or see a doctor for what ails us. We could hardly do without it.

So you should not feel guilty about accepting science and freely using its standard assumptions and criteria in your work.

Galileo said it well when he wrote: '*But in the natural sciences, whose conclusions are true and necessary... one must take care not to place oneself in the defense of error*' (Drake 1967:53–54).

- ¹ The HSL notation has been carefully chosen to be easy to use with a keyboard, so for 'not it' we properly use a hyphen (-it). Likewise we use lower case x and v for 'and' and 'or'. For the HSL temporal connective 'and then' we use a hyphen and angle bracket (->). En dashes, special characters, and other typographic gymnastics are unnecessary and may be seen as hypercorrections or signs of a foreign accent. There is no arrow in the HSL notation.
- ² 'Orthoconcept' is a technical term in hard-science linguistics that was introduced in a LACUS paper (Yngve 2005:362) dedicated to Adam Makkai, to replace the term 'concept' in the traditional semiotic theory of the sign (thing, concept, and name), which has proved not to be scientifically defensible. Orthoconcepts are properties of role parts of superordinate linkages and require an observer role part in which to form. For a more complete discussion see Yngve 2006.

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IV



HISTORY &
BEHAVIOR



OLD ENGLISH CLAUSE GRAMMAR AND THE IDEATIONAL METAFUNCTION

MICHAEL CUMMINGS
York University, Toronto

THE SYSTEMIC-FUNCTIONAL APPROACH to clause grammar is based on the three general linguistic functions, or ‘metafunctions’ (Halliday & Matthiessen 2004:31), the interpersonal, the textual, and the ideational. The interpersonal metafunction is the use of language to convey attitude, the textual to carry the text-forming potential, and the ideational to represent extra-linguistic reality. From the ideational perspective, the clause is divided between participant roles and processes, which together constitute transitivity (29–31, 169). The purpose of this paper is to demonstrate that the Systemic-functional model of Modern English transitivity is at least partially applicable to Old English (A.D. 650–1150) as well.

1. PROCESS TYPES IN OLD AND MODERN ENGLISH. As the Systemic network notation of **Figure 1** (overleaf) illustrates, there are just six different process types in Systemic-functional clause transitivity, each with its own distinctive set of participant roles: the material, the mental, the relational, the verbal, the behavioral and the existential processes (170–72).

Following is a set of transitivity examples for modern English which suggests that material processes involve Actor and Goal participants, mental involve Senser and Phenomenon, relational processes are copular, verbal involve Sayer and Verbiage, behavioral involve involuntary actions, and the existential process simply announces the existence of something.

Clause: material	→	<i>A car hits John.</i>
Clause: mental	→	<i>John reflects on life.</i>
Clause: relational	→	<i>John becomes a statistic.</i>
Clause: verbal	→	<i>John speaks of his sad story.</i>
Clause: behavioral	→	<i>John laughs at danger.</i>
Clause: existential	→	<i>There is a ward for such cases.</i>

The next six numbered examples show all six process types in Old English. I have taken my examples wherever possible from *Beowulf* (Klaeber 1950), designated by line. A few later examples are from Healey (2004), with her designations, which include the notation of Frank and Cameron (1973:29–267).

Clause: material →

- (1) ... hu þa æþelingas ellen fremedon. [Beo. 3]
... *how those nobles performed valor.*

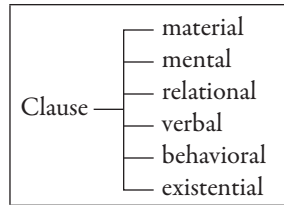


Figure 1. System network for processes.

Clause: mental →

- (2) ... we ... þeodcýninga þrym gefrunon ... [Beo. 1–2]
 ... we ... *have heard of the power of the kings* ...

Clause: relational →

- (3) ... þæt wæs god cýning! [Beo. 11]
 ... *that was a good king!*

Clause: verbal →

- (4) ... swa he selfa bæd ... [Beo. 29]
 ... *as he himself had commanded* ...

Clause: behavioural →

- (5) ... feower bearn ... in worold wocun ... [Beo. 59–60]
 ... *four children ... awoke into the world* ...

Clause: existential →

- (6) Ða wæs eft ... sigefolca sweg [Beo. 642–44]
Then (there) was again ... the merriment of a gallant people ...

However I will hereafter limit the discussion to just the material and the relational process types.

2. SYSTEMS FOR MATERIAL PROCESSES AT PRIMARY DELICACY. The system network for material processes at its most general consists of two distinctions, both true of all material process clauses. This is shown in **Figure 2**.

The first distinction is between clauses which are ‘transformative’ and clauses which are ‘creative’. The ‘creative’ clauses have processes involving coming into being, represented typically by verbs like ‘do’, ‘make’, ‘be born’, and so forth. All the rest are ‘transformative’ clauses, in which the process is something short of coming into being. The second distinction, which cuts across the first, is between intransitive clauses, with one participant, an Actor, and transitive clauses, with two participants, an Actor and a Goal (Halliday & Matthiessen 2004:180–86). This makes for just four combinations of clause classes, and can be illustrated by the following Old English examples:

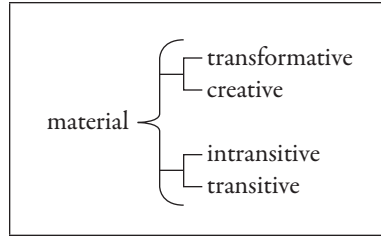


Figure 2. Elementary network for material processes.

material: { transformative/intransitive } →

- (7) ... he ... weox under wolcnum ... [Beo. 7–8]
 ... *he ... flourished under the heavens ...*

where there is just one participant, the Actor, and he already exists before undergoing change;

material: { transformative/transitive } →

- (8) Oft Scyld Scefing ... meodosetla ofteah ... [Beo. 4–5]
 Often Scyld Scefing ... *took away the mead-seats ...*

where there are two participants, Actor and Goal, and the goal already exists before undergoing change;

material: { creative/intransitive } →

- (9) ... þonne wig cume ... [Beo. 23]
 ... *when war should come ...*

where there is just one participant, the Actor, who comes into existence; and

material: { creative/transitive } →

- (10) ... hu þa æþelingas ellen fremedon. [Beo. 3]
 ... *how those nobles performed valor.*

where the Actor participants bring the Goal participant into existence.

3. SYSTEMS FOR MATERIAL PROCESSES AT FURTHER DELICACY. In **Figure 3** (overleaf), we have more delicate distinctions in the material process network, which include 1) a subsystem of the category transformative, 2) a subsystem of the category creative, and 3) two subsystems of the category transitive.

Transformative processes, in which the affected participant already exists, have three sub-categories, elaborating, extending, and enhancing. Elaborating transformative processes involve some kind of embellishment of the participant, e.g., to warm, to scratch, to shape, to strengthen, to illuminate, to clothe, and so forth. Extending transformative processes involve

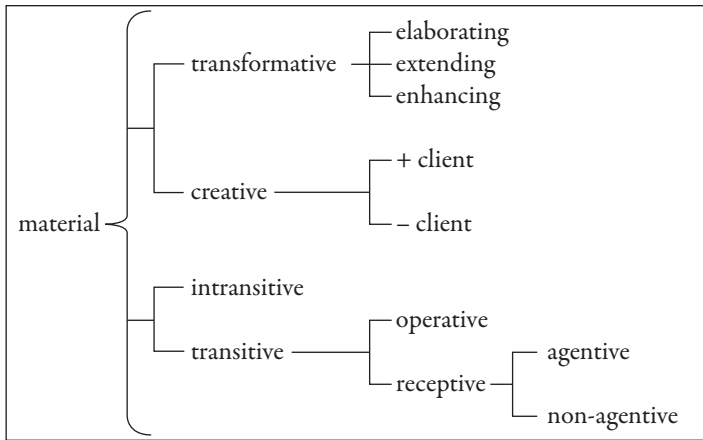


Figure 3. Advanced network for material processes.

giving or receiving, e.g., to sell, to feed, to email, and so on. Enhancing transformative processes involve motion, e.g., to walk, to shake, to bring, to take, and many others.

The subsystem for creative processes involves the specification or omission of a 'client', i.e., a secondary participant for whose benefit the Actor or Goal is brought into existence. The transitive subsystems involve, first, a distinction between 'operative', that is, active voice, and 'receptive', that is, passive voice. The receptive category involves the further distinction between explicit specification or omission of the Agent, under the terms 'agentive' and 'non-agentive' (181–83, 186–89). This now makes for 20 combinations of clause classes, which can be illustrated for Old English clauses in the following examples. The first four of these are for elaborating transformative processes, those that embellish:

material: { transformative: elaborating / intransitive } →

- (11) ... he ... weox under wolcnum ... [Beo. 7–8]
 ... *he ... flourished under the heavens ...*

material: { transformative: elaborating / transitive: operative } →

- (12) ... se Ælmihtiga ... gefrætwaðe foldan sceatas ... [Beo. 92–96]
 ... *the Almighty adorned the surface of the earth ...*

material: { transformative: elaborating / transitive: receptive: agentive } →

- (13) ... wæs se irenþreat wæpnum gewurþað. [Beo. 330–31] ¹
 ... *the armed troop was adorned by weapons.*

material: { transformative: elaborating / transitive: receptive: non-agentive } →

- (14) ... siððan æfenleoht ... beholen weorþeð. [Beo. 413–14]
 ... *after the light of evening becomes hidden.*

The second four are for extending transformative processes, those that involve giving and receiving, or their antonyms:

material: { transformative: extending / intransitive } →

- (15) ... and gegaderiað hy to þam lice ... [Æ Let 2 (Wulfstan 1) B1.8.2]
... and they assemble around that body ...

material: { transformative: extending / transitive: operative } →

- (16) Oft Scyld Scefing ... meodosetla ofteah ... [Beo. 4–5]
Often Scyld Scefing ... took away the mead-seats ...

material: { transformative: extending / transitive: receptive: agentive } →

- (17) ... buton hit sy ær fram Gode gyfen. [G.D. 1 (C) B9.5.2]
... unless it be previously given by God.

material: { transformative: extending / transitive: receptive: non-agentive } →

- (18) Þa wæs Hroðgar herespeld gyfen ... [Beo. 64]
Then was Hrothgar given success in war ...

The next four are enhancing transformative processes, involving motion of Agent or Goal:

material: { transformative: enhancing / intransitive } →

- (19) Him ða Scyld gewat to gescæphwile ... [Beo. 26]
Then Scyld went to his fated hour ...

material: { transformative: enhancing / transitive: operative } →

- (20) ... hi hyne þa ætbæron to brimes faroðe ... [Beo. 28]
... they then bore him to the current of the sea ...

material: { transformative: enhancing / transitive: receptive: agentive } →

- (21) ... wearð ... mid eoferspreotum ... on næs togen, wundorlic wægþora ... [Beo. 1437–40]
... the wondrous wave-roamer was drawn to the headland ... with boarspears ...

material: { transformative: enhancing / transitive: receptive: non-agentive } →

- (22) Þær wæs madma fela ... frætwa gelæded ... [Beo. 36–37]
There was a great deal of treasure ... of trappings brought ...

Among the creative processes, four are with a specified client participant:

material: { creative: + client / intransitive } →

- (23) Him on fyrste gelomp ... þæt hit wearð ealgearo ... [Beo. 76–77]
For him it came about in a time ... that it was all ready ...

material: { creative: + client / transitive: operative } →

- (24) ... þæt him gastbona geoce gefremede ... [Beo. 177]
 ... *that for them the devil might produce help ...*

material: { creative: + client / transitive: receptive: agentive } →

- (25) Næs him gesceapen fram gode ... þæt he sceolde godes bebod tobreca ...
 [Æ.CHom I, 1 B1.1.2]
It was not determined for him by God ... that he had to break God's law ...

material: { creative: + client / transitive: receptive: non-agentive } →

- (26) ... hwæþer him ænig wæs ær acenned dyrnra gasta. [Beo. 1356–57]
 ... *whether any of evil spirits had previously been begotten for them.*

The last four are creative processes without a specified client participant:

material: { creative: – client / intransitive } →

- (27) ... þonne wig cume ... [Beo. 23]
 ... *when war should come ...*

material: { creative: – client / transitive: operative } →

- (28) ... hu þa æþelingas ellen fremedon. [Beo. 3]
 ... *how those nobles performed valor.*

material: { creative: – client / transitive: receptive: agentive } →

- (29) Wæs hefig gefeoht & micel gefremed from þæm ilcan hæðnan cyninge ...
 [Bede 3 B9.6.5]
A great and heavy battle was given by that same heathen king ...

material: { creative: – client / transitive: receptive: non-agentive } →

- (30) ... siþþan furþum wæs rodor aræred ... [Jul A3.5]
 ... *since first the heavens were created ...*

4. A SYSTEM FOR RELATIONAL PROCESSES. We turn now to relational process clauses, those which are copular, that is, affirm or deny that X is Y. The typical verbal group in such clauses is the verb 'to be', but some lexical verbs also have copular purport (e.g., in some contexts, NE become, get, turn, seem, appear, look, etc.). As the network in **Figure 4** indicates, one further distinction is among 'intensive', 'possessive', and 'circumstantial' relational clauses.

Possessive and circumstantial clauses register possession or the circumstances of time, place or manner in either the participants or in the semantics of the verb. All the rest by default are intensive. A second distinction, involving all such clauses, is between 'attributive' and 'identificational' clauses. In the attributive case, the Y of 'X is Y' is some quality or some generic category, i.e., an Attribute; and the X is its Carrier. In the identificational case, typically the Y of 'X is Y' is the specific means of identification of X, the Identifier,

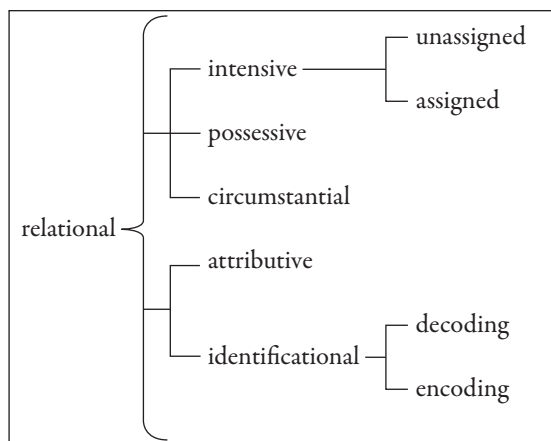


Figure 4. Network for relational processes.

and X is the Identified (210–19). The first three Old English examples illustrate the basic intensive relational clauses:

relational: { intensive: unassigned / attributive } →

(31) ... Beowulf wæs brene ... [Beo. 18]

... *Beowulf was famous* ...

relational: { intensive: unassigned / identificational: decoding } →

(32) ... se wæs moncynnes mægenes strengest ... [Beo. 196]

... *he was of mankind the strongest in might* ...

relational: { intensive: unassigned / identificational: encoding } →

(33) ... ofost is selest to gecyðanne, hwanan eowre cyme syndon. [Beo. 256–57]

... *most often it is the best to say what your origins are.*

The ‘decoding’, ‘encoding’ distinction in identificational clauses is based on the dichotomies of Identified and Identifier, Token and Value. Each pair of participants in an identificational relational clause shows both dichotomies. In (32), Subject *se* ‘he’ is the Identified participant, and Complement *moncynnes mægenes strengest* ‘the strongest of mankind in might’ its Identifier. At the same time, Subject *se* ‘he’ is a Token instance to the more general Value *moncynnes mægenes strengest* ‘the strongest of mankind in might’. This mapping together of Identified with Token, Identifier with Value is called ‘decoding’ (227–34). In (33), Complement *selest* ‘the best’ is identified by the Subject Identifier *to gecyðanne, hwanan eowre cyme syndon*. ‘to say what your origins are’. This Complement Identified, however, is the Value, and the Subject Identifier is the Token—the opposite mapping arrangement, called ‘encoding’ (230). The next three examples illustrate the difference between ‘unassigned’

intensive clauses (the three previous examples), and intensive clauses in which the affirmation or denial is assigned to a third participant (237–39).

relational: { intensive: assigned / attributive } →

- (34) No ic me ... hnagan talige ... þonne Grendel hine ... [Beo. 677–78]
I don't consider myself meaner ... than Grendel (does) himself ...

relational: { intensive: assigned / identificational: decoding } →

- (35) Wa ðam ðe talað ... yfel to gode. and god to yfele. þeostru to leohte. and leoht to
 ðeostrum ... [Æ. C. Hom II, 21 B1.2.24]
*Woe to him that reckons ... evil as the good, and good as the evil, darkness as light, and
 light as darkness ...*

relational: { intensive: assigned / identificational: encoding } →

- (36) ... þæt <we> taliað to rihte, loc hwæt us gelicigie ... [W. Pol. 4 (Jost) B13.4]
... that we reckon as right whatever pleases us ...

The next three examples illustrate possessive relational clauses. In the attributive type, the Predicator^Complement is taken to represent ownership as a characteristic (cf. 244–45).

relational: { possessive / attributive } →

- (37) Habbað we ... micel ærende ... [Beo. 270]
We have an important ... errand ...

In the identificational type, realized through the use of the lexical verb *agan* 'own, possess' rather than *habban* 'have', a Complement is typically seen to be an Identifier mapped together with the Value, as in (38) (cf. 246–47):

relational: { possessive: / identificational: decoding } →

- (38) ... ahte ic holdra þy læs ... [Beo. 487]
... I possessed the less of loyal men ...

As in (39), the use of *agan* in the passive voice makes the Agent ('him') to be Identifier and Token, yielding the encoding type.

relational: { possessive / identificational: encoding } →

- (39) ... þæra are ... þe him geahnod wæs. [Æ. L.S. (Basil) B1.3.4]
... the favour ... which was possessed by them.

In circumstantial relational clauses, the Y of 'X is Y' represents circumstantial information about time, space, reason, manner, or cause. This is taken to be a characteristic of X in the attributive type, the Attribute element often realized as a prepositional phrase cf. (240–41):

relational: { circumstantial: / attributive } →

- (40) Ða wæs on burgum Beowulf Scyldinga ... [Beo. 53]
Then was Beowulf of the Scyldings in the town ...

In identificational circumstantial relational clauses, both the Identifier and the Identified elements may be circumstantial information, as in (41), where the Identifier *forma sið* 'the first time' is also the Value, and the Identified *þæt* 'that' is the Token, making the relationship decoding (cf. 242).

relational: { circumstantial / identificational: decoding } →

- (41) Ne wæs þæt forma sið, þæt he Hroþgares ham gesohte ... [Beo. 716–17]
Nor was that the first time, that he sought out Hrothgar's house ...

It may also happen that the circumstantial information is realized entirely with the verbal element, as in the case of (42), where the verb *folgian* 'follow', semantically equivalent to 'BE + after', represents a temporal relationship between the Identifier *sped* 'success' and the Identified *þære spræce* 'that speech' (cf. 243–44). Since the Identifier, *sped* 'success', is here the Token, and the Identified, *þære spræce* 'that speech', the Value, this is the encoding type.

relational: { circumstantial : / identificational: encoding } →

- (42) ... ne gelyfde, þæt þære spræce sped folgode. [Gen. A,B A1.1]
... didn't believe that that speech success should follow.

5. CONCLUSION. This article has demonstrated the applicability of the Systemic-functional model of transitivity for a partial description of the transitivity of Old English. A more complete account of the transitivity of modern English, including all the process types, and at further stages of delicacy, is available in Halliday and Matthiessen (2004:168–305, esp. 183, 209), and could therefore serve as a guide for the extension of this description of Old English.

¹ On the potential ambiguity of OE past participles as either heads of passive verbal groups, or heads of adjectival groups in attributive relational clauses, cf. Mitchell 1985, 1: ¶¶ 762–67, pp. 312–15.

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A HISTORICAL SOCIOLINGUISTIC STUDY OF THE TERM *CREOLE* IN LOUISIANA

CONNIE EBLE

University of North Carolina at Chapel Hill

HURRICANES KATRINA AND RITA in 2005 made people throughout the world aware of the ethnic and social complexities that characterize the current population of southern Louisiana and the Gulf Coast. As journalists sought to create human interest stories, they called upon historians and linguists to distinguish among such labels for the people of the region as *Acadian*, *Cajun*, *Creole*, and *Yat*.

The oldest and most socially sensitive of these terms is *creole*. This essay traces the main stages of its development as an ethnic label in Louisiana;¹ it is restricted to *creole* as a substantive and adjectival referring to a type of people, not as a descriptor of animals (*creole horse*), plants (*creole tomatoes*), or styles (*creole cottage*). In current U.S. English, *creole* is an ethnic designation labeled by the *Dictionary of American Regional English* as *chiefly Louisiana*. Its history can be aligned chronologically with four periods: COLONIAL (up to 1804); ANTEBELLUM (1804–1861); THE AGE OF WHITE SUPREMACY (from the U.S. Civil War to the end of legal school segregation by *Brown v. the Board of Education* in 1954); THE STRUGGLE FOR RACIAL JUSTICE AND THE RECOGNITION OF AFRICAN ROOTS (1960s to the present).

1. THE NEW WORLD. *Creole* was born in the social ferment brought about by European colonial expansion to the Americas and to Africa beginning in the 16th century. The English word is a borrowing from French *créole*, first attested in the 17th century (Rey 2001, vol. 2:789). The French form is probably an adaptation of *criollo*, the Spanish version of Portuguese *crioulo*, diminutive of *cria* 'person who is raised in the house, especially a servant', from *criar* 'to bring up' (Allsopp 1996:176). In the new societies created by the European conquest and settlement of the western hemisphere, *criollo* (~*crioulo*) for 'someone of the household' took on a different meaning. By the mid-1500s, *criollo* meant 'native to the colonies'. A document from Peru from 1557 lists nineteen Negroes as '*criollo*', i.e. born outside of Africa (Lockhart 1968:175).

The earliest contribution to the story of *creole* that I have found comes in the writings of Garcilaso de la Vega, el Inca (1539–1616), whose *Comentarios reales de los Incas*, the first part published in Lisbon in 1609, is the earliest masterpiece of Spanish literature by a native-born Spanish-American author. Garcilaso, the son of a Spanish conquistador and an Inca princess, was born in Cuzco and lived there until he was twenty. He wrote the *Comentarios* when he was living in Spain at the close of the 1500s (Ilgen 2005:129–32). Chapter XXXI of Book Nine gives this comment on the word:

...any Spanish man or woman who arrives from Spain is called a Spaniard or Castilian, the two words being quite interchangeable in Peru; and I have used them indifferently in this history and in the *Florida*. The children of Spaniards by Spanish women born there are called *criollos* or *criollas*, implying that they were born in the Indies. The name was invented by the Negroes, as its use shows. They use it to mean a Negro born in the Indies, and they devised it to distinguish those who come from this side and were born in Guinea from those born in the New World, since the former [the Africans] are held in greater honor and considered to be of higher rank because they were born in their own country, while their children were born in a strange land. The parents take offense if they are called *criollos*. The Spanish have copied them [the Negroes] by introducing this word to describe those born in the New World, and in this way both Spaniards and Guinea Negroes are called *criollos* if they are born in the New World. The Negro who arrives there from the Old World is called Negro or Guineo. (Vega 1966:607)

Creole is seldom found in English until the 18th century, and even to the present in English use it describes someone or something exotic, not Anglo-Saxon. For instance, I have never seen the word *creole* used to distinguish either whites or blacks by place of birth in the British colonies of the Atlantic seaboard like Virginia or North Carolina, although it was used in British possessions in the Caribbean that had previously belonged to other European powers, for instance Jamaica. To that extent, *creole* has never become fully assimilated into the English lexicon, as it always incorporates an allusion to non-English heritage.

The earliest citation for *creole* in the *Oxford English Dictionary* is from Edward Grimstone's 1604 translation of José de Acosta's 1590 *Historia natural y moral de las Indias*: 'Some Crollos (for so they call the Spaniards borne at the Indies)'. Acosta's Spanish text has *Criollos*. Clearly either the translator (Grimstone) or his printer was not familiar with the word, spelling it *Crollos* both in the text and in the heading. The next OED citation is almost a century later, from William Dampier's 1697 *A New Voyage Round the World*: '...there was one Mr. Cook, an English Native of St. Christophers, a Criole, as we call all born of European parents in the West Indies'. Dampier's is the earliest use I have found applying a form of the word to a British colonial.

The OED gives ten citations from 18th-century sources in the entry for *creole*. Of these, three refer to plants and animals. Of the remaining seven, five are in texts translated from Spanish. Only two are from writers composing in English, one in a 1738 issue of a short-lived Whig periodical and the other in Smollett's 1771 novel *Humphrey Clinker*.

Thus lexicographical evidence through the 18th century points to nativity in the colonial possessions of European powers as the characteristic feature of someone to whom *creole*, in one of its forms, could apply. If Garcilaso de la Vega's memory is correct, in Peru the term originated with Africans and at least early on it conferred lower status. Apparently, though, throughout Spanish America and the Caribbean, distinguishing those born and raised in the colonies from newcomers and from the indigenous population was desirable, and the word *creole* in one of its forms served that purpose. I have found no evidence that *creole* was used in the British colonies of the Atlantic seaboard, even though immigration

from both the British Isles and Africa permitted a native-born colonial population to come to maturity before the middle of the 17th century.

2. COLONIAL LOUISIANA. When the LeMoyne brothers from Canada, Iberville and Bienville, founded the French colony of Louisiana on the northern shores of the Gulf of Mexico in 1699, the term *creole* was already well-established in the non-English portions of colonial America. Throughout Louisiana's colonial period, first as a colony of France and then as a colony of Spain, *creole* was used in the new world sense of 'native to the colony'.

The range of understandings evoked by the term *creole* in Louisiana since then has been the topic of many articles, both scholarly and unscholarly. The late historian Joseph G. Tregle, Jr., set the standard of scholarship (1952 and 1992), and his writings on the meaning of the term in 19th-century Louisiana are authoritative. Tregle used government documents, contemporary newspapers, and personal papers to provide a clear account of the meaning of *creole* in antebellum New Orleans, when it still meant 'native to the colony' and, by extension, 'culturally French'. Tregle notes that:

creole identity actually figured very little in the community's concerns during the whole of Louisiana's colonial experience. It was the clash between original Louisianans and migrant Anglo-Americans after the Louisiana Purchase which for the first time made place of birth a critical issue and gave the *creole* label its crucial significance. (1992:133–34)

3. ANTEBELLUM AMERICAN LOUISIANA. The Louisiana Purchase set up the opposition between *creole* and *American*, between French speakers and English speakers. There is abundant evidence up to the Civil War that the label *creole* applied to Louisianans of all ancestries with a prior claim to the place and to a way of life shaped by the French language and colonial French culture. Creoles held themselves distinct from the *Americans* long after Louisiana had become politically, economically, and even socially part of the antebellum American South.

Many political leaders in the United States had opposed the Louisiana Purchase of 1803 because of the religious, cultural, and linguistic incompatibility of the people of the United States and the people of the Louisiana territory. At the time of the Purchase, according to one 1802 traveler's account, the city of New Orleans had a population of 8,050—of whom 2,775 were slaves and 1,335 were free people of color (Johnson 1992:53, n. 79). Most spoke French. In 1809 the francophone population was augmented by 9,059 refugees from Saint Domingue, from the three social classes—2,731 whites, 3,102 free people of color, and 3,226 slaves (Lachance 1992:105). When Louisiana became the eighteenth state in 1812, francophones formed the majority. But that was to change before the Civil War.

Even before the Louisiana Purchase, English-speaking Americans saw opportunities afforded by the vast Louisiana territory and crossed the Mississippi River into the Spanish colony, exchanging nominal allegiance to the Spanish crown and the Catholic Church for land grants or administrative positions. The acquisition of Louisiana by the United States removed all impediments to their westward migration. During the 19th century, the

influx of Americans overwhelmed the small population of creoles established in northern Louisiana along the banks of the Red and Cane Rivers. The newcomers were quite different from the founder population: The Americans' forebears had come from the British Isles, they spoke varieties of English, and they were Protestants. One study of the settlers of the hill country of northern Louisiana maintains that 73.3% of them came from the five states of Georgia, Alabama, South Carolina, Tennessee, and Mississippi (Trout 1996:473). In northern Louisiana, the development of an agricultural economy based on cotton also contributed to the region's rapid Americanization, as it allied the commercial interests of the area to those of other southern cotton-producing states and greatly increased the need for slave labor, a need that could be filled only by acquiring slaves from states east of the Mississippi. The English-speaking slaves were as threatening to the way of life of the creole slaves as the white American newcomers were to the white creoles. The Americans were a threat to another creole group in northern Louisiana, the free creoles of African ancestry who were culturally French and held themselves apart from both whites and slaves.

By the 1830s in northern Louisiana the creoles were greatly outnumbered by the Americans, and French was giving way to English in public life. Only in rural southern Louisiana where the Acadians had settled did French speakers remain in the majority. There is some evidence that in the 19th century Acadians too called themselves *creole*, although that is not the practice today. A former nun, Desirée Martin, wrote for her nieces and nephews in French a series of evening reflections, which was published in 1877 shortly after her death. She writes with pride that her ancestors were among the Acadians displaced from Nova Scotia in the 18th century. She takes pains to tell her nieces and nephews about their ancestors' exile and hardships—and of their faithfulness to God throughout their struggles. She exhorts the young members of her family as *creoles* to be strong and steadfast and live up to their noble heritage, addressing them as 'Creoles' (1877:20). Although she is Acadian, she calls herself and her family *creole*.

Creole in North America, however, is most closely associated with the city of New Orleans. After the Louisiana Purchase, creoles there were soon overwhelmed by two great streams of outsiders—by enterprising Americans mostly from the northeast and, later in the antebellum period, by German and Irish immigrants. Louisiana became much more prosperous than it ever had been as a colony of France or Spain. The port of New Orleans opened the heartland of North America to the buying and selling of goods and became second to New York for trade and as a point of entry for immigrants to the United States. Creoles could claim little credit for the economic prosperity, and by the time of the Civil War they saw their language, culture, and political power almost gone. As for the free creoles of African ancestry, before the Civil War they could educate themselves; could work for themselves or for wages; could own, inherit, and bequeath property; could travel abroad; and could seek redress of grievances in court. But they could not vote or hold office or marry whites. Furthermore, they were looked down upon because of their African racial heritage by whites, who were often less accomplished and refined.

4. A CENTURY OF LEGAL RACIAL SEGREGATION. The precarious three-part class structure of antebellum Louisiana fell apart after the Civil War and Emancipation. Before the war,

whites, slaves, and free people of African heritage who spoke French could all be called *creole*. But after the war, all Americans were free, doing away with the class of free people of color. The essential distinction became not slave vs. free but black vs. white. The free creoles of color found themselves defined not by their freedom but by their color. And 'one drop' of Negro blood made them *colored*. The fact that their ancestors had been among the state's earliest non-indigenous inhabitants and that they had lived as free before Emancipation counted for nothing. They were assigned to the inferior category. As for the white creoles, they had already lost their power and influence twice, first as the founders of the state to the Americans and then as the losers in the Civil War to the northerners. Now they embraced their only claim to superiority, their whiteness—to the extent that they deluded themselves into believing that *creoles* could have only the pure white blood of France or Spain flowing in their veins.

By the end of Reconstruction in 1877, the white creoles were constructing a 'creole myth' of racial purity and past cultural superiority (Tregle 1992:173–85). In the last decades of the 19th century, the eminent local historian and creole Charles Gayarré deliberately fabricated history and publicly proclaimed and repeatedly defended the 'pure white' definition of *creole*. But even by wholeheartedly embracing white supremacy, he could not save the prestige of his class. By 1900 the white creole segment of New Orleans antebellum society had dissipated into the white, southern, American majority—no longer a coherent community united by language, religion, or neighborhood. The French Quarter—the *vieux carré*—was rapidly becoming a slum.

The free creoles of color, on the other hand, after the Civil War tended to hold on to what had earlier set them apart from slaves—their French language, culture, and religion and often a mixed heritage of French, Spanish, and Native American that was perceptible in lighter skin color. They continued to call themselves creoles. Legally prohibited from the opportunities of whiteness, they lived together and attended church and school together. In the 1890s they published in French and English the only black daily newspaper in the United States (Logsdon & Bell 1992:256). These creoles provided leadership for the advancement of Negroes in the city and the nation. A mixed-race creole from New Orleans, Homer Plessy, challenged the separation of races in trains in Louisiana. The denial of his appeal by the United States Supreme Court in 1896, in the landmark Plessy vs. Ferguson case, resulted in the 'separate but equal' principle that stood in law until 1954. After legal racial segregation ended in the 1960s, a creole, Ernest Morial, became the first mayor of New Orleans of African ancestry. The New Orleans community of creoles of color and other enclave communities throughout the state continue to use the term *creole* to designate themselves.

5. CONTEMPORARY LOUISIANA. Although historians prefer to use the inclusive pre-Civil War understanding of *creole*, i.e. 'native to New Orleans or Louisiana', the racially aligned meanings predominate in the ordinary usage of current Louisianans. As an ethnic label that people currently apply to themselves, *creole* is used almost exclusively by African Americans whose ancestors spoke some type of French, whether they are of mixed racial ancestry

or not. Whites who are descendants of French or Spanish colonials usually call themselves Acadians, Cajuns, French, or Spanish.

A search of current websites using the terms *Louisiana* and *creole* yields a range of definitions. In the name of the Cane River Creole National Historical Park (<http://www.nps.gov/cari/>), the National Park Service uses *creole* to designate the cultures developed by blacks, whites, and people of mixed racial heritage who lived in the vicinity of the Cane River in northern Louisiana during the colonial period. The Louisiana Creole Heritage Center, based at Northwestern State University in Natchitoches (<http://www.nsula.edu/creole/definition.asp>), gives a definition based on racial or ethnic mixing:

Creoles are generally known as people of mixed French, African, Spanish, and Native American ancestry, most of who[m] reside in or have family ties to Louisiana... In the past, under White government, Creoles were not allowed to be an equal part of society. Blacks, free and slaves, did not feel Creoles were part of their world either.

The Center for Cultural and Eco-Tourism of the University of Louisiana at Lafayette (<http://ccet.louisiana.edu>) gives the major points in the development of the term's meaning in a brief essay by historian Carl Brasseaux. A commercial website dedicated to all facets of life in New Orleans (<http://www.gumbopages.com>) posts the 1995 reflections of Edward J. Brantley, 'On Being Creole'. Brantley observes that:

the common definition of a Creole in New Orleans today is a light-skinned black person who can trace their family history in the city back a very long way. White society all but dropped use of the term because Creoles became a sub-group of blacks.

At the end of his essay, however, Brantley claims the term for everything and everyone native to the city:

So, 'Creole' means different things to different people. The one common theme throughout all of the definitions, however, is that Creole is referring to something that is native New Orleans. Whether it's Creole tomatoes, Creole cuisine, or a Creole debutant, they're all New Orleans.

In August 2005, Hurricane Katrina brought devastation to New Orleans and adjoining parishes and to the Mississippi Gulf Coast. A year and a half later, less than half of the population has returned to the city, major portions of which still lie in ruin. In the efforts to rebuild New Orleans and preserve its unique ethnic heritage, the old term *creole* is being reclaimed as fusing two meanings—a mixture of ethnicities that has been characteristic of the city since its founding in 1718 and being native to the city. In current local rhetoric, *Creole* is being used as a metaphor for the city itself—a mixture of diverse people who were born together and together created a unique culture—and all New Orleanians committed to the resurrection of the city are entitled to call themselves *creole*.

- ¹ This essay on the historical backdrop of *creole* in Louisiana will be part of a larger essay on the development of *creole* and its variants and derivatives and their use in interpreting European colonialism in the western hemisphere.

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DIALECTOLOGICAL CONCEPTS IN DANTE

ROY HAGMAN

Trent University

DE VULGARI ELOQUENTIA, Dante Alighieri's principal work on the subject of language, presents many difficulties to the modern interpreter wishing to ascertain Dante's position in the history of linguistic thought. First of all, it is a very incomplete work: just the first chapter and part of the second of what was to be a much longer treatise on poetics. Secondly, it is not a very polished work, containing many inconsistencies that frustrate modern scholars. Perhaps the most serious difficulty is that it is a very isolated work, having no real scholarly precursors we are aware of, nor any scholarly progeny until many centuries later. If it had been written by anyone but Italy's premier poet, it would most likely have quickly been lost and forgotten.

This very uniqueness, though, has stimulated many twentieth-century scholars to attempt to make sense of the work and relate it to accomplishments in the relatively new field of linguistics. The scholarly literature in Italian is extensive and goes back well into the nineteenth century, but tends to focus on Dante's views on the Italian literary language, which his works played such a large role in establishing. This can be said of the commentaries that accompany the Italian translations of Marigo (1938) and Mengaldo (1968) and a variety of other works (summarized in Pagani 1982, but see also Mazzocco 1995). An exception to this trend is Luigi Peirone's 1975 *Il 'De vulgari eloquentia' e la linguistica moderna*. Most commentary in English has accompanied the various English translations (Welliver 1981, Shapiro 1990 and Botterill 1996), though Dante's accomplishments are given a prominent place in Robins' *A Short History of Linguistics* (1967).

In a recent reassessment of Dante's contribution, Danesi (1991) takes issue with Robins' attribution to Dante of a founding role in both the fields of historical and Romance linguistics, by claiming that he possessed neither a concept of the linguistic family tree, as proposed by August Schleicher, nor a concept of Vulgar Latin as ancestral to the languages of the Romance family. Danesi concludes that without these concepts, Dante's work can be considered little more than an attempt at language classification. I would like to argue in this paper that Dante's contribution was more than this, much more, and that both Robins and Danesi have simply misjudged what it was.

De Vulgari Eloquentia is a late medieval treatise, but there is something very different about it. The work is true in many parts to the form of a medieval treatise in its reliance on authorities, i.e. writers from the evangelists up to medieval Christian thinkers such as Isidore of Seville. The commentators have gone to great pains to trace for us the sources of most of Dante's ideas. However, in the midst of this treatise are passages that do not conform to this pattern, as Dante says:

Nos autem oportet quam nunc habemus rationem periclitari, cum inquirere intendamus de hiis in quibus nullius auctoritate fulcimur, hoc est de unius eiusdemque a principio ydiomatis variatione secuta. (And now I must risk whatever intelligence I possess, since I intend to inquire into matters in which I can be supported by no authority—that is, into the process of change by which one and the same language became many.) (I, ix, 1)¹

In this statement, Dante warns the reader that he is about to depart from the usual practice of a medieval treatise and make statements he cannot back up with an acceptable source. In other words, he is about to rely on his own experience. Our next question is: what experience might have given him the confidence to do this?

Dante is believed to have written *De Vulgari Eloquentia* several years after his expulsion from Florence for political reasons in 1302. He is known to have spent the intervening years travelling widely in Italy, while at the same time pondering the question of which dialect should form the basis of poetic Italian, a subject he addresses in the book. After listing the major dialects of Italy, he tells us:

Quare ad minus xiiii vulgaribus sola videtur Ytalia variari. Que adhuc omnia vulgaria in sese variantur, ut puta in Tuscia Senenses et Aretini, in Lombardia Ferrarenses et Placentini; nec non in eadem civitate aliqualem variationem perpendimus, ut superius in capitulo immediato posuimus. Quapropter, si primas et secundarias et subsecundarias vulgaris Ytalie variationes calcolare velimus, et in hoc minimo mundi angulo non solum ad millenam loquale variationem venire contigerit, sed etiam ad magis ultra. (So we see that Italy alone presents a range of at least fourteen different vernaculars. All these vernaculars also vary internally, so that the Tuscan of Siena is distinguished from that of Arezzo, or the Lombard of Ferrara from that of Piacenza; moreover, we can detect some variation even within a single city, as was suggested above, in the preceding chapter. For this reason, if we wished to calculate the number of primary, and secondary, and still further subordinate varieties of the Italian vernacular, we would find that, even in this tiny corner of the world, the count would take us not only to a thousand different types of speech, but well beyond that figure.) (I, x, 7)

Note that at two points in this paragraph he implies that he believes this degree of diversity not to be peculiar to Italian, but true of languages generally. He then proceeds to discuss each of the major dialects and its suitability as the basis of a poetic literary Italian, giving illustrative quotes for most dialects, showing how each possesses some phonetic, grammatical, lexical or supersegmental characteristic that makes it unsuitable. This survey takes up chapters XI through XV. Though modern readers may find his grounds for rejecting dialects to be flimsy and his transcriptions crude, the wealth of detail he includes was unprecedented for his time and shows a strong interest in, and broad acquaintance with, the dialects of medieval Italy.

The evidence that inspired Dante's original ideas on language was probably more than anything else his personal observations in the realm of what would later be termed dialectology. That being the case, we may be witnessing in him the birth of an empirical approach to language not very different from that of his English contemporary Roger Bacon in the physical sciences. Let us now look at what were Dante's original ideas on the nature of language and relate them to the empirical observations that may have led him to propose them.

Dante begins *De Vulgari Eloquentia* by distinguishing two types of language, a natural form and an artificial form:

*...vulgarem locutionem appellamus eam qua infantes assuefiunt ab assistentibus cum primitus distinguere voces incipiunt; vel, quod brevius dici potest, vulgarem locutionem asserimus quam sine omni regula nutricem imitantes accipimus. Est et inde alia locutio secundaria nobis, quam Romani gramaticam vocaverunt. Hanc quidem secundariam Greci habent et alii, sed non omnes: ad habitum vero huius pauci perveniunt, quia non nisi per spatium temporis et studii assiduitatem regulamur et doctrinamur in illa. Harum quoque duarum nobilior est vulgaris: tum quia prima fuit humano generi usitata; tum quia totus orbis ipsa perfruitur, licet in diversas prolationes et vocabula sit divisa; tum quia naturalis est nobis, cum illa potius artificialis existat. (...I call 'vernacular language' that which infants acquire from those around them when they first begin to distinguish sounds; or, to put it more succinctly, I declare that vernacular language is that which we learn without any formal instruction, by imitating our nurses. There also exists another kind of language, at one remove from us, which the Romans called *gramatica*. The Greek and some—but not all—other peoples also have this secondary kind of language. Few, however, achieve complete fluency in it, since knowledge of its rules and theory can only be developed through dedication to a lengthy course of study. Of these two kinds of language, the more noble is the vernacular: first, because it was the language originally used by the human race; second, because the whole world employs it, though with different pronunciations and using different words; and third, because it is natural to us, while the other is, in contrast, artificial.) (I, i, 2–4)*

Dante is contrasting here spoken, or vernacular, language with classically based literary language, specifically in this case, spoken Italian and Medieval Latin. In this passage he defines the mode of learning as the first characteristic that distinguishes vernacular language from *gramatica*, i.e. natural language from artificial.

The second characteristic that distinguishes the two forms of language is variability. His view with regard to vernacular language is stated in the following passage:

...homo sit instabilissimum atque variabilissimum animal, nec durabilis nec continua esse potest, sed sicut alia que nostra sunt, puta mores et habitus, per locorum temporumque distantias variari oportet. (...since human beings are highly unstable and variable animals, our language can be neither durable nor consistent with itself;

but, like everything else that belongs to us (such as manners and customs), it must vary according to distances of space and time.) (I, ix, 6)

Dante's perception of universal linguistic variability seems surprisingly accurate from our modern perspective. That he should perceive variability in space is perhaps least surprising. In his time, Italy, like many parts of Europe, had no one vernacular literary language, but a variety of competing forms reflecting local dialect differences, thus there was no universally accepted literary form to create the illusion of a common national language.

That he should perceive variation in time is more remarkable, since it involves the projection of small changes perceptible in his lifetime onto a larger time scale, but he is well aware of this:

...nam que paulatim moventur, minime perpenduntur a nobis, et quanto longiora tempora variatio rei ad perpendi requirit, tanto rem illam stabiliorem putamus... cum sermonis variatio civitatis eiusdem non sine longissima temporum successione paulatim contingat, et hominum vita sit etiam, ipsa sua natura, brevissima. (...when things happen little by little, we scarcely register their progress; and the longer the time the changes in a thing take to be detected, the more stable we consider that thing to be ... changes in a city's speech can only come about gradually, and over a vast span of time; and human life is, by its nature, very short.) (I, ix, 8–9)

How Dante managed to divine the imperceptible nature of linguistic change from the very little information he must have had available to him is, frankly, incredible. It is possible that he may have noticed differences between the written Italian of his time and that of preceding centuries, but he does not say this, so we will never know.

Perhaps Dante's greatest accomplishment, however, was to relate variation in space to variation in time:

Si ergo per eandem gentem sermo variatur, ut dictum est, successive per tempora, nec stare ullo modo potest, necesse est ut disiunctim abmotimque morantibus varie varietur, ceu varie variantur mores et habitus, qui nec natura nec consortio confirmantur, sed humanis beneplacitis localique congruitate nascuntur. (If, therefore, the speech of a given people changes, as I have said, with the passing of time, and if it can in no way remain stable, it must be the case that the speech of people who live distant and apart from each other also varies in many ways, just as do their manners and customs—which are not maintained either by nature or association, but arise from people's preferences and geographical proximity.) (I, ix, 10)

One can see the germ of an understanding of the mechanism that converts linguistic change into dialect variation in the clause: 'arise from people's preferences and geographical proximity.' There is the implication that changes arise from choices people make among various possibilities, and that specific choices are common to people within narrow geographical regions. Notice that this is the second time Dante has compared language to manners and

customs. It may well have been this analogy which generated many of his insights into the nature of linguistic variation that enabled him to propose ideas that reached beyond his own personal observations.

The artificial type of language that Dante calls *gramatica* and identifies with the language we call Medieval Latin, though he mentions Greek and other possibilities, is viewed as an entirely distinct phenomenon from vernacular language. Dante believed *gramatica* to have been created by some people at some time in the past to avoid the disadvantages arising from the variability that characterizes vernacular language, as he says:

Hinc moti sunt inventores gramatice facultatis: que quidem gramatica nichil aliud est quam quedam inalterabilis locutionis ydemptitas diversibus temporibus atque locis. Hec cum de comuni consensu multarum gentium fuerit regulata, nulli singulari arbitrio videtur obnoxia, et per consequens nec variabilis esse potest. Adinvenerunt ergo illam ne, propter variationem sermonis arbitrio singularium fluitantis, vel nullo modo vel saltem imperfecte antiquorum attingeremus auctoritates et gesta, sive illorum quos a nobis locorum diversitas facit esse diversos. (This was the point from which the inventors of the art of grammar began: for their *gramatica* is nothing less than a certain immutable identity of language in different times and places. Its rules having been formulated with the common consent of many people, it can be subject to no individual will; and, as a result, it cannot change. So those who devised this language did so lest, through changes in language dependent on the arbitrary judgment of individuals, we should become unable, or, at best, only partially able, to enter into contact with the deeds and authoritative writings of the ancients, or of those whose difference of location makes them different from us.) (I, ix, 11)

He was drawn to this conclusion by his observation of the stability over centuries of the language represented in the writings of the ancient authors. The idea that a vernacular language could display such consistency is to him ridiculous, as he says it is:

...si extimationes hominum qui parum distant a brutis putant eandem civitatem sub invariabili semper civicasse sermone... (...the opinion of men who differ little from brute beasts, that a particular city should always have carried on its affairs in an unchanging language...) (I, ix, 9)

The creation of Latin he viewed as a deliberate act, '...its rules having been formulated with the common consent of many people...', attributing a remarkable degree of democracy to the process. Could he possibly have envisioned the creation of a compromise dialect drawing upon the characteristics of many? It is true that the creation of modern literary languages has often involved dialect compromise, in many instances made possible by the choice of an archaic orthography from a time when dialect differentiation was less advanced. We will never know if that is what Dante meant, because he never explicitly says that vernacular language played any role in the creation of *gramatica*. From the little he says on the matter we might even entertain the possibility that he considered it a purely abstract intellectual

creation. In truth, he had no personal observations upon which to base this aspect of his view of language, so perhaps he was wise to remain silent.

There is an interesting parallel that Dante fails to make between the creation of *grammatica* and that of literary Italian. After surveying all the major dialects of the Italian peninsula and rejecting all of them as a basis for literary Italian, he concludes that there is a form of Italian vernacular that could form the basis of such a language:

Que quidem nobilissima sunt earum que Latinorum sunt actiones, hec nullius civitatis Italie propria sunt, et in omnibus comunia sunt: inter que nunc potest illud discerni vulgare quod superius venabamur, quod in qualibet redolet civitate nec cubat in ulla.

(But the most noble actions among those performed by Italians are proper to no one Italian city, but are common to them all: and among these we can now place the use of the vernacular that we were hunting above, which has left its scent in every city but made its home in none.) (I, xvi, 4)

What he is referring to here could be anything from a collection of common structural characteristics to a full-blown spoken koiné, but he is especially vague and poetic about it, so we will never know. Several commentators on *De Vulgari Eloquentia* have remarked on Dante's surprising failure to draw this parallel, and to realize that what he wanted to create might have been just a new *grammatica* for the Italy of his time. However, what they fail to recognize is that the Latin that Dante called '*grammatica*' is a literary language that entirely lacks a spoken vernacular counterpart, and in his view has always done so, making it a distinct linguistic phenomenon from literary language in general. What Dante is describing in this passage must then be a third type of language, a literary vernacular based upon a spoken form. His failure to give it a separate name is especially surprising since this form is, in truth, the primary subject of *De Vulgari Eloquentia*.

We may credit Dante with the following insights into the nature of vernacular and literary language. Vernacular language is characterized by universal and inter-related variation in time and space, and is subject to very gradual and localized change. Classical literary language is characterized by stability in time and space, an artificial mode of creation, and an association with no one locality. He less explicitly implies the possibility of a second type of literary language derived from an idealized form of the vernacular and possessing some of the stability and geographical consistency of the classical form. Spoken vernacular language is learned first at home by imitation, while literary languages are learned later in schools, and, in the case of the classical form, by the deliberate teaching and learning of rules.

We usually think of these insights as having arisen as the result of nineteenth-century historical linguistic investigations, not as being the products of medieval linguistic speculation, making their presence in Dante's writings seem out of place. However, they are not the insights of the dominant Schleicherian school of family tree and reconstructive linguistics (Schleicher 1876), as assumed both by Robins and Danesi, but rather that of the contemporary and competing school of dialectological linguistics. The theory that guided this school was given form by Johannes Schmidt in his *Die Verwandtschaftsverhältnisse der indogermanischen Sprachen* of 1872 and became the guiding interpretive theory for the decades of

dialectological investigation that followed. In this seminal work, Schmidt argues on comparative linguistic grounds alone for the complete abandonment of the family tree model and its replacement by a geographically based spreading wave model of linguistic relationship. Elements of Dante's description of the relationship between change and geography, in fact, bear a remarkable similarity to Schmidt's wave theory. The models of language proposed by Schleicher and Schmidt presented distinct and often conflicting perspectives on the phenomenon of linguistic variability that have never been completely reconciled. It was the dialectologists who established the universality of linguistic variation and related it explicitly to human populations on the landscape over time. It was dialectologists also who discovered that standard languages were the product of certain dominant social classes and so often uniform over large regions.

Schleicherian linguistics grew out of philology and was based upon the comparative study of what were, in nearly all cases, literary languages. In this it differed significantly from the linguistics of the dialectologists, whose data was drawn exclusively from transcriptions of spoken language. From Dante's perspective, all of the conclusions of Schleicherian linguistics would have to be considered invalid because the data upon which they were based were hopelessly flawed, being drawn from artificial as opposed to natural languages. Latin and Greek he includes specifically among the *gramaticas*, though other literary languages such as Sanskrit and Old Church Slavonic he would likely have included as well, had he known them. Only the studies of the twentieth century using language data transcribed by linguists might have been acceptable to him.

Interestingly, a family tree of languages is implied in Dante's work. He believed that three mutually unintelligible languages were brought to Europe from Babel, and that the one that found its way to southern Europe eventually became French, Provençal, and Italian. This proposal he makes in the chapter immediately preceding his discussion of language differentiation, which is meant to serve as an explanation of how this could come about. For someone who believed all languages to be dialectally diverse, as did Dante and as did many of Schleicher's opponents, the concept of the family tree is difficult to conceive, since it requires a unitary language at the apex of the tree. What made it possible for Dante to conceive this is that he believed there to have been a unique period in human history during which dialects did not exist, the period immediately following the Tower of Babel. In accordance with God's punishment, mankind was struck with a multitude of mutually unintelligible languages. This special circumstance thus created a set of purely unitary languages and it was these that differentiated after their speakers migrated to various parts of the world. Dante's reconstruction of early linguistic history thus produces a nearly perfect family tree model, since it does not require the suspension of disbelief with respect to dialectal variation required to conceive the trees of the Schleicherian model.

There is one insight of Dante's, however, that exceeded the grasp of even the nineteenth-century dialectologists: the invented nature of Medieval Latin. This insight would have to wait one more century for the growth of sociolinguistics, the development of the concept of diglossia, and the postulation of a deliberate act of invention for Medieval Latin by Wright (1982). Dante does not say when *gramatica* was invented, but he does say that one of the reasons for its invention was to enable us '...to enter into contact with the deeds and

authoritative writings of the ancients...; implying that it was not the ancients who invented it. However, since the centuries-long stability of the language in ancient times was one of the things that led Dante to believe it was artificial, one might be wrong to attribute to him a clear opinion on the question of timing.

What perhaps most surprises his commentators is Dante's failure to connect the existence of the Romance language group with the spread of Latin throughout southern Europe as a result of the expansion of the Roman Empire. Granting that he did miss this, it is by no means true, however, that he failed to derive the Medieval Romance languages from the speech of the ancient Roman populace. The statement that might be cited to represent Dante's views on Vulgar Latin is the following:

Quapropter audacter testamur quod si vetustissimi Papienses nunc resurgerent, sermone vario vel diverso cum modernis Papiensibus loquerentur. (On this account, therefore, I make so bold as to declare that if the ancient citizens of Pavia were to rise from the grave, they would speak a language distinct and different from that of the Pavians of today.) (I, ix, 7)

What strikes modern readers most about this passage is his failure to say that the ancient Pavians spoke Latin. Aside from the fact that he considered Latin to be an artificial language spoken by no one, it is very likely that he believed the speech of the Roman Empire to have been no less diverse than that of the Romance area of his time, or at least nearly so. For him, the dialects of Medieval Europe came from the dialects of Ancient Europe. Besides, in his scheme of European linguistic history it would have been inescapable that by the time of the ancient Romans the unitary languages following the Tower of Babel would have long since undergone differentiation into multiple varieties.

Dante is very careful to present as complete a picture as he can of the distribution of languages in Europe. From Babel, the ancestor of the French, Provençals, and Italians came directly to southern Europe, that of the Slavs, Hungarians, Teutons, Saxons, and English to northern Europe, and that of the Greeks to Eastern Europe, bringing a single language to each region. However, nowhere does he mention the Gauls or any other of the Celtic peoples. From their location in southern Europe, we might safely conclude that he considered the speech of these peoples to come from the same source as French, Provençal, and Italian.

If this is the case, perhaps we may just have to excuse Dante for deriving the Romance languages directly from an ancestor closer to what we call Proto-Italo-Celtic than to some unitary spoken Latin, which would have been inconceivable to him anyway. Besides, the time period scholars postulate for the existence of the common ancestor of Italic and Celtic could correspond quite well with that of the episode of the Tower of Babel in Dante's Biblically dominated chronology of the world. Thus, what at first sight appeared to be an ignorance of Roman history on Dante's part, might in the end be better seen as just an extreme position on the question of time depth for Proto-Romance.

- ¹ All translations are from Botteril's 1996 edition, accepting the occasional departures from literal-ity for stylistic reasons. Passages are identified by book, section, and line in the Botteril edition.

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R.I.P. THE MODERN NEED FOR AN ANCIENT LANGUAGE

SAUL LEVIN

State University of New York at Binghamton

MANY GRAVESTONES IN AMERICAN CEMETERIES have the carved abbreviation *R.I.P.* and sometimes the words are spelled out: REST IN PEACE, with the verb indicative, imperative, or subjunctive. Those letters are in a tradition older than the writing of the English language in an alphabet of twenty-one or more letters. The alphabet came into English from Latin; so did the habit of abbreviation and of carving something brief and sweet on a burial stone.

In Rome before the Christian era, separate from the name of the deceased one, were sometimes carved the words SIT.TIBI.TERRA.LEVIS (cf. Martial 9.28.8), meaning ‘May the earth be light/soft upon thee’. But the old religion waned as Christianity spread; and if the noun TERRA, with inherent feminine gender, suggested a mother goddess, it had to be avoided. Around the fifth century, a different statement—bilingual—was inscribed on a plaque in Naples:¹

HICREQUIESCITINPACE
BARBARVSFILIVSCVMANI
DEVENAFRIQVIVIXITAN
NVSPLM&VIIIDEPOSI
TVSIDSIVLIASINDVI
שלום על מנוחתך

‘Here rests in peace
Barbarus, son of Cumanus
from Venafrum, who lived
eighteen years—more [or] less;
buried on the Ides of July, Ind[iction] VI’²
‘Peace upon thy rest’

Some rules of spelling, and of Latin grammar, were breaking down in this period; but even so, the meaning of *Requiescit in pace* comes through unmistakably.

The Jewish formula was soon adopted for the burial of Christians. The three-letter abbreviation of REQUIESCITINPACE, in English, helped to maintain one sense of the verb *rest*. However, *rest* does not sound much like any form of *requiesce(re)*; and no one knowing Latin well would use the compound verb *resta(re)* ‘with + stand’ in regard to a dead relative or friend.

I

MEMORIALS TO THE DEPARTED are a conspicuous setting for the solemnity of an ancient expression. Besides the native resources from Old English on, we accept many refinements from Latin. But we need, just as much, the everyday wisdom of the Romans. They knew from repetition:

‘Quot homines, tot sententiae;
 ‘De gustibus non est disputandum;
 ‘De mortuis nihil nisi bonum;’

we grow up in the modern world with no equivalent that helps us see things in perspective.

Let’s grasp each construction literally, before we paraphrase. The first word *quot* begins with *qu-* and is interrogative ‘How many’; it is answered *tot* ‘so many’. And the structure of *sententia* makes it a verbal noun, formed from the present participle of a verb belonging to the ‘fourth’ conjugation. It means ‘a feeling’ rather than ‘an opinion.’³

Under the ancestral custom of the Roman Senate, the presiding Consul called upon each senator, in order of rank; first, ‘Marce Tulli, quid sentis?’ (not ‘quid opinaris?’). The English vocabulary has absorbed the nouns *sentence* and *opinion*, but not the related verbs, other than *opine*. So our rendering of ‘Quot homines, tot sententiae’ should be ‘How many men? So many feelings.’ Then, if we wish, we can go on to paraphrase it: ‘As many opinions as people.’

The reply of Marcus Tullius, on a point of diplomatic courtesy, would be something like:

Consentio Gaio Iulio: Rhodios esse amicos populi Romani
 ‘I feel, with C. Julius, that the Rhodians are friends of the Roman people’
 (or the contrary, ‘Dissentio Gaio Iulio: Rhodios non esse amicos’).

In our time the politics have changed much and keep changing; but it is good for each of us to reflect privately: What I say or think is *unius hominis sententia* (one man’s feeling).

II

A DIFFERENT SORT OF PERMANENT NEED for Latin is the nomenclature of each plant and each animal. The scientific name of the barred owl of North America is *Strix varia*; the orchard oriole is *Icterus spurius*. The Swedish botanist Carl von Linné (in the eighteenth century) overcame the confusion among the words for thousands of kinds of plants, which varied from one country of Europe to another—even from village to village. He had collected specimens from everywhere and labeled them; he wrote a brief but adequate description of each. Putting his data together, he classified each specimen systematically, first according to *genus*; and then each genus was divided into *species*, which he called by an appropriate adjective.

To share his knowledge, Von Linné wrote up his work all in Latin; he titled his book *Systema naturae*, and Latinized his own name to Linnaeus. Many of the nouns had actually come into Latin from ancient Greek writers—Aristotle, Theophrastus, and others; but in any event, Von Linné described the genus in enough detail so that any individual could be recognized. Within the genus, for instance, one species he called *varia* ‘streaked’. Or if it looked as if some outside male had contaminated the germ, Von Linné declared the species to be *spurius* ‘bastard’.⁴

His system was appreciated throughout Europe; the naturalists sent him more and more specimens, even from the most distant continents. He had to revise and enlarge the book; before long it went on from plants into animals, which required hundreds of additional pages. In the nineteenth century, the system grew so elaborate that the successors of Linnaeus had to group thousands of genera of plants and of animals under families (*familiae*), then under orders (*ordines*), and even into *phyla* such as Vertebrata. The Greek term *φῦλα* had originated in human societies, keeping track of each family over many generations, especially their intermarriage and adoptions.⁵

Linnaeus was typical of the learned writers who flourished for more than a thousand years. They acquired the language in school or were tutored at home. They produced more Latin books than all the earlier ones that had survived from the Roman republic and empire. Of the neo-Latin books, a few became classics in their own right: besides *Systema naturae* by Linnaeus, one also finds Thomas More's *Vtopia*, Spinoza's *Tractatus theologico-politicus* and *Ethica, ordine geometrico demonstrata*⁶ and Grotius' *De jure belli et pacis*. *Nova methodus pro Minimis et Maximis* by Leibnitz and *Philosophiae naturalis principia mathematica* by Isaac Newton were published in the 1680s, within a few years of each other. They independently advanced beyond algebra, and discovered or invented the calculus.

But since the seventeenth century, composition in Latin has dwindled, even among classical scholars; and the trend seems irreversible.⁷ The Latin and Greek languages remain important, however, in our contemporary world, as sources of root-words for the coinage of new vocabulary. These constitute a base, accessible to educated persons from many backgrounds, in most spheres of knowledge and contemporary culture.

III

THE MOST PERMANENT, or recurrent, motive to recall a language from the distant past is on behalf of the dead or the dying. Thus the composer Giuseppe Verdi, or his librettist Salvatore Cammarano, hit upon the most poignant word to begin the scene of *Il Trovatore*, which will never be surpassed in the theater:

Choir of monks (offstage):

Miserere d'una alma già vicina	'Take pity on a soul now close
alla partenza che non ha ritorno.	to the parting which has no return.
Miserere di lei, bontà divina;	Take pity, divine goodness,
preda non sia dell' infernal soggiorno.	lest that soul fall prey to the abode in hell.'

The entire text of the opera is in modern literary Italian. But the mood here is set by the key-word from Latin. The composer's muse needed and repeated, over and over, an echo from the Requiem Mass. Had *Miserere* been replaced with some Italian equivalent, the drama would have been weakened.⁸

The very meaning of *Miserere* reaches back even beyond Latin. The Latin word is translated from Greek, which preserves—even in another part of the same Mass—the prayer 'Kyrie eleison.' The Latin Christians were so attached to these two words together that the

phrase could not be rendered effectively into Latin as 'Domine miserere'. Few Catholic priests or monks still knew the Greek language well enough to read a book written in Greek letters. So they wrote KYRIE ELEISON, as adapted to the Latin alphabet.⁹

IV

THE HISTORY OF THE UNITED STATES holds a lesson about the revival of a phrase from a most ancient language. John Brown in 1859, with a band of Abolitionists, seized the arsenal at Harper's Ferry (on the border of Virginia and Maryland). The army recaptured it, and Brown was tried for treason and sentenced to death by hanging. But soon his admirers in Massachusetts took a popular tune and sang these words to it:

John Brown's body lies a-mouldering in the grave. [three times]
His soul goes marching on.
(refrain):
Glory, glory, Hallelujah [three times]
His soul goes marching on.¹⁰

Hallelujah came from the English versions of the Bible. But this bit of Hebrew had—long ago—become imperishable. About 200 B.C., the Hebrew Psalms were translated into Greek for synagogues in Alexandria. Ordinary Jews in Egypt were already losing the Hebrew language; but even without reading the two words הללו יה in Hebrew letters, they remembered when to shout them. Nor was the meaning lost: the imperative plural of the verb [hll] 'praise', and the shorter form of the holy name יהוה [yhwh]. Psalm 148 begins:

הללו יה הללו את יהוה

Right after the brief formula הללו יה comes the slightly fuller repetition, which gives all four letters of the holy name; and before the Tetragrammaton the Hebrew particle את [et] marks the ensuing word as direct object of the verb. The translators turned this second occurrence of הללו into a straightforward Greek verb ΕΠΑΙΝΕΙΤΕ; and then, instead of the Tetragrammaton, they followed the routine of substituting the word ΚΥΡΙΟΝ (a loose equivalent to the Hebrew euphemism אדני 'Adonay' for 'Lord'). In this Psalm, wherever the original text has הללו יה—a little earlier in this Psalm and at the end of it—the Hebrew was not translated into Greek words. The phrase was merely pronounced with Greek sounds that were more or less similar to the Hebrew, and written in Greek letters ΑΛΗΛΟΥΙΑ.¹¹

Wherever it appeared in any other Hebrew text, the worshippers continued to either read or recite הללו יה from memory, and not only in text written in Hebrew and in Greek, but eventually in all the languages of Europe. And this phrase is carried over, untranslated, from the ancient worshippers. The Psalms are equally a Jewish and a Christian heritage. Although the translators knew how הללו יה could be expressed in Greek, this formula—in every language—remains eternally Hebrew.

So those who spoke, or sang, in English drew upon this tradition. In the second year after John Brown's exploit, the Civil War broke out. On one side, the men who faced glory and death put *his* name along with praise of the God that he had believed in.

Of those who supported the cause of the Union, not everyone liked to have it linked to this one martyr. Julia Ward Howe wrote *The Battle Hymn of the Republic*; and in each stanza her sentiments are more Christian, and based on passages from the Bible:

Mine eyes have seen the glory of the coming of the Lord.
He is trampling out the vintage where the grapes of wrath are stored.
He hath loosed the fateful lightning of his terrible swift sword.
His truth is marching on.

The refrain of the *Battle Hymn* takes over the ancient words from the Abolitionists:

Glory, glory, Hallelujah. Glory, glory, Hallelujah. Glory, glory, Hallelujah.

Only then can the hymn writer insist that 'His truth' refers to the Lord, instead of the more popular 'His soul goes marching on,' which honored John Brown.¹²

¹ *Corpus Inscriptionum Judaicarum*, I, 558. This plaque was excavated in 1908. A photograph in David Noy, *Jewish Inscriptions of Western Europe* (Cambridge University Press, 1993), I, 46–47 and plate XI. The language of this inscription switches from Latin to Hebrew; see J. N. Adams, *Bilingualism and the Latin Language* (Cambridge University Press, 2003), pp. 271–74.

² The 'indiction' refers to one year in a recurring cycle of fifteen years. Noy and the Italian scholars cited by him do not synchronize this date with a better known chronology. The first cycle of indictions began in the reign of the Roman emperor Diocletian, which would be A.D. 313, according to V. Grumel, *La chronologie* (vol. I of *Traité d'Études byzantines*; Paris: Presses Universitaires de France), p. 240.

³ From the participle *sentiens*, we might expect the derived noun to be **sentientia*—five syllables. The shortened form *sententia* arose by leaving out the vowel [i] in the syllable right before the accent.

⁴ In ancient Latin, the adjective *spurius* had been one of the few commonly used praenomina, or first names, which a boy was called, along with the *nomen gentile* from his father. Originally, each SPVRIVS was accepted—with some reluctance—by the pater familias, even if the mother had not been joined to him by the ritual of *confarreatio*. But as matrimony became for most Romans only a civil compact, the practice of naming was changed, so that any man's first-born son received the father's praenomen as well as the nomen gentile. This later fashion overrode the age-old function of the praenomen, to recall the time of birth: Mārcus in the month of Mars, Sextus in the sixth month, Lucius at day-break, etc.

⁵ An amusing requirement of the Linnean style is the Latin rule of gender. Each genus comes in as masculine or feminine or neuter—whichever it was in Latin. Or some of them were compound nouns, coined in recent times with pieces of Greek words. Such terms were liable to be shifted carelessly from masculine to feminine, or the converse, by the naturalist that first described them. But in any case, he has given them a gender that sticks. Every species must show, in its final syllable,

how it complies with its genus. *Strix varia* has its ending *-a*, regardless of the sex of the individuals being observed, or dissected. And *Icterus spurius* ends in *-us*, no matter whether the individual is a male singing or a female about to lay an egg.

- ⁶ For less learned readers, Spinoza composed and published books in Dutch. After his quarrel with the synagogue of Portuguese Jews in Amsterdam, he wrote statements in Portuguese and in Castilian. According to his opponent Salomon van Til (professor of theology at the University of Utrecht), Spinoza wrote, but never published, a treatise in Spanish against the Old Testament, titled something like *Apologéticos... para su separación del Judaísmo*. From this lost work, Spinoza may have excerpted passages and woven them into chapters of *Tractatus theologico-politicus*, which he did publish anonymously in 1670.
- ⁷ Only in the field of epigraphy did the two major and unfinished series, *Corpus Inscriptionum Latinarum* and *Inscriptiones Graecae*, keep using Latin. But when *Supplementum Epigraphicum Graecum* was revived by scholars in the Netherlands—after an interruption during the Second World War—only the Latin title was retained; the commentary on the inscriptions, from then on, is in English.
- ⁸ In classical Latin this verb governs the genitive case: *nostri, mei*, etc. But later, the dative was preferred; hence in the Requiem Mass, *Miserere nobis*.
- ⁹ The Greek vowel H in ΕΛΕΗΣΟΝ had merged with I over many generations before the Christian era.
- ¹⁰ The tune came from a camp-meeting song written about 1856 by William Steffe of South Carolina. It began: ‘Say, brothers, will you meet us on Canaan’s happy shore?’ His refrain went back still earlier.
- ¹¹ See my article, ‘Poetic License, Embellished by Music’, in *LACUS Forum* 27 (2001), pp. 239, 244–45. In the endnotes I explained several phonetic complications.
A minor discrepancy, in the Hebrew verb ‘Praise ye’, makes the vowel of the second syllable *η* according to the Greek tradition but a minimal [ə] according to the Jewish נִקְדָּוִים ‘punctators’. Along with that, the middle consonant of the root לָלַח is simple, not reinforced in הִלְלִיָּהּ [hə ləlu^w–yoh], whereas the double ΛΛ in ΑΛΛΗΛΟΥΙΑ shows a different way of pronouncing the Hebrew.
- ¹² Andrew Scholtz and Daniel Williman, my colleagues and friends, have shown me much valuable evidence. From my father’s cousins in Chicago, I heard this parody of ‘John Brown’s Body’ by an unknown Yiddish comedian:

[‘fiʃel der ‘reyter ‘likt in’drerd un ‘foyəlt
‘zaynə ‘ʃik ‘geyn nok a’rum]

The surname Brown suggested an epithet in Yiddish, ‘the Red’; [‘likt in’drerd un ‘foyəlt] echoes in Yiddish what was expressed in English. And the verb [‘geyn] is from the same Germanic verb as ‘goes’, but the Yiddish verb is made plural, because the sound of the original words, ‘His soul’, prompted the silly rendering [‘zaynə ʃik] ‘His shoes’; the word [nok] ‘on’ (one syllable, accented) evoked [a’rum] ‘around’.

A *TERMINUS CIRCA QUEM* FOR THE 'EMERGENCE'
OF 'HUMAN' 'LANGUAGE'?

ROBERT ORR

'Such temples are rare in Hyperborea nowadays; but we knew it for a shrine of Tsathoggua, one of the elder gods, who receives no longer any worship from men, but before whose ashen altars, people say, the furtive and ferocious beasts of the jungle, the ape, the giant sloth and the long-toothed tiger, have sometimes been seen to make obeisance and have been heard to howl or whine their inarticulate prayers.'

—Clark Ashton Smith, *The Tale of Satampira Zeiros*

THE EMERGENCE OF HUMAN LANGUAGE as understood today has recently become one of the most-discussed, multifaceted issues in linguistics, although much still remains to be elucidated. The purpose of this paper is to suggest one possible factor in the process of its emergence. One starting-point might be provided by Darwin's detailed discussion of language, where he describes it as 'one of the chief distinctions between man and the lower animals... [with a] large power of connecting definite sounds with definite ideas; and this obviously depends on the development of the mental faculties.' He contrasts human language with the cries uttered by monkeys, dogs and birds, which, although they do contain limited numbers of distinct sounds to express emotions such as pain, fear, pleasure, cannot be directly compared to human language.¹ Pushing the analogy a little further, he cites the well-known experiments of Daines Barrington² on birdsong, which appeared to show that '[t]he slight natural differences of song in the same subjects inhabiting different districts may be appositely compared... [to] provincial dialects, and the songs of allied, though distinct, species may be compared with the languages of distinct races of man' (Darwin 2003:516–17).

2. DEFINITIONS AND TERMINOLOGY. Lamb (1999:284–85 and personal communication) describes language as a 'complex of multiple systems... each consisting of many nections, interconnected on multiple levels', and lists ten questions that become transformed 'as soon as one stops thinking of language as a unitary object'. Two of these questions are directly relevant to our purpose here: 'when... did language originate?' and 'did language originate once or more than once?' He goes on to discuss various issues related to the origin of language (Lamb 1999:286–91), pointing out that excessively rigid definitions in this area, even of terms that at first sight seem straightforward (e.g. *human*, *language*), are less helpful rather than more.

One reason for the plethora of quotation marks in the title of this paper, therefore, is the difficulty of defining some of the basic concepts utilised. Firstly *terminus circa quem* has been selected over *terminus post quem* and *terminus ad quem* to accommodate concerns

very similar to those articulated by Lamb: what is meant here is not an exact point in time, but rather two periods of indeterminate length (the process of mastery of fire and the process of developing language) which overlap to some extent.

Similarly, the term *emergence* is used in the sense of the actual process of the emergence of language, rather than an end result.

For the purposes of this paper the very term *human* also needs to be more closely defined; this, paradoxically, results in its being extended. Therefore *human* may be assumed to include extinct hominids such as *Homo erectus* (*Homo ergaster*), *Homo neanderthalensis*, and not even to exclude such close relations as *Australopithecus* or *Pithecanthropus*.

Finally, the term language itself will in turn be extended to cover a larger area than normally assumed, to include various types of prehuman language, the existence of which can only be hypothesised at this stage. Newnham's definition, negative by implication, will be borne in mind here:

That is not to say that [Chinese] is disabled, or that certain things 'cannot be said' in Chinese. Nobody would use it if this were so. (Newnham 1971:22, also cited as an epigraph to Orr 2006).

The above definition, which will also be taken to imply the addition of increments as new concepts are mastered and structures invented, will be taken as close to that of *language* for the purposes of this paper.

2. PREHUMAN LANGUAGE: ORIGINS OF LANGUAGE AND LIFE. Respectively, the origin of language and the origin of life are two of the most contentious issues in the whole of scholarship. It has often been suggested that both may be traced back to a single event, and that all life and all language would be ultimately traceable to a single respective source.³ By 1867 the discussion had reached such a pitch that, on a famous occasion, the Société Linguistique de Paris banned the very discussion of the origin of language. No such ban, however, seems to have been placed on discussing the origin of life.

2.1. A BIOLOGICAL PARALLEL. Décsy (2000:22) suggests three stages for linguistic evolution:

1. Linguistic History: after 1000 AD, earlier in the cases of Latin, Greek, Chinese, Arabic, Hebrew, etc.
2. Comparative Linguistics: 4000 BC – 3000 BC – 1000 AD, earlier in some cases;
3. Paleolinguistics: from the beginnings of human language until 4000 BC – 3000 BC.

However far back one extends human history, most of the chronology of human linguistic evolution would have taken place during the Paleolinguistics period. Décsy (2000:22) suggests that human language itself might only be 35,000 years old, taking up only '1% of the phylogenetic age of mankind'.

Tattersall (1999:230–35) discusses the problem of the origin of language in some detail, pointing out that despite the advances that have been made in studying the human brain

and consciousness, much remains obscure. He suggests (1999:233) that the acquisition of 'our cognitive capacities, epitomized by our linguistic abilities' was 'an emergent event that was probably rather minor in terms of physical or genetic innovation, that was comparatively sudden, and that came very late in our evolutionary history', echoing Décsy (2000).

2.2. MAMMALOCENTRISM. In discussing the theoretical issue of linguistic monogenesis, Lamb (1999:287) suggests a scenario whereby language may have had multiple origins, but at the same time all modern languages may be descended from a single ancestor, if that ancestor language, initially one emerging language among many, had succeeded in supplanting all possible rivals. These rivals would have been competing among themselves before one emerged. Such a process can only be hypothesised.

One possibility that Lamb (1999) does not discuss is that some sort of language may actually have predated the current period of mammalian predominance.

As humans are mammals, it is a commonplace to assume that the emergence and rise of mammals after the demise of the dinosaurs represented a progression to a more advanced group of life forms. The affection felt by people towards mammalian pets, such as cats, dogs, etc., as opposed to the revulsion many express at snakes, spiders, etc., is only the most obvious surface manifestation of this phenomenon. The realisation that whales are mammals, and not fish, has undoubtedly played a major role in the recent outpouring of human advocacy on their behalf. Sihler (2000:98 fn.) even points out that a semantic feature such as [+mammal] could be said to have some cognitive reality in language (to account for the unacceptability of locutions such as **the lobster sneezed* as opposed to *the cat sneezed*).

However, for most of warm-blooded vertebrate prehistory mammalian evolution was suppressed by apparently more successful life-forms. A visitor to Earth from another planet in the late Cretaceous, if asked, may well have predicted that certain dinosaurs, e.g., *Deinonychus*,⁴ were more likely to evolve language than the nocturnal, rarely seen, small mammals. Desmond (1977:107), in a chapter titled *The Dark Age*, reminds us that mammals are very rare in the fossil record for most of the Mesozoic, appearing in the Triassic, and then seeming to vanish for the Jurassic and most of the Cretaceous. He concludes by making the startling statement that:

It was not until the Cretaceous, however, that we find signs that mammals were being hounded even into the night. They were terrorised, moreover, by creatures *more cunning than themselves*. (emphasis original)

One concrete manifestation of this is provided by Parker (2006:22–24), who points out that early mammals actually *lost* colour vision, probably because it is less useful for nocturnal creatures: might this be seen as a step backwards overall? For further, similar, examples, see Bickerton (1990:104).

2.3. ANTHROPOCENTRISM. Communication using differentiation of sounds is widespread among the 'higher' animals. It is commonplace that several mammals and birds have distinctive cries to denote different dangers, e.g., vervet monkeys can distinguish between 'leopard!';

'eagle!', or 'snake!' (see Bickerton 1990:12, *passim*, 141, Holland 2005:432–33, Boyd & Silk 2006:444–45). Some animals and birds can even understand the warning signals of other species, e.g., yellow-casqued hornbills (*Ceratogymna elata*) are able to tap into monkeys' early-warning systems; they not only distinguish between leopards and eagles themselves, but also between monkey alarm calls given to these predators (Pickrell 2004). It is still unknown how far back in evolutionary history such phenomena might be reconstructed.

3. FROM PROTOLANGUAGE TO LANGUAGE. In a series of publications Bickerton (1990, 2000, see also Calvin & Bickerton 2000, Boyd & Silk 2006:444–45) has suggested that human language emerged from an earlier stage which he dubs a proto-language. Proto-language would have been developed by prehuman primates, at one level above the vervet monkey calls cited above, with the juxtaposition of concepts together in phrases, but nothing more elaborate, e.g. 'skid crash hospital' (Bickerton 2000:273), without any extra arguments or ways of indicating the exact relationship between them. He suggests that hominid language would have remained at the proto-language stage for about two million years, and that *syntax*, making all sorts of new locutions possible, would have developed about 200,000 BP, thus marking the emergence of language roughly as we understand it. Bickerton sees the development of syntax as marking a break between proto-language and language as we understand it today. The emergence of syntax would have made all sorts of new expressions possible. Although the following point is elementary, it bears repeating here: it should be recalled that the term syntax covers far more than mere word order; it involves relationships such as subordinate clauses, aspect/tense, mood, voice, the use of verbal constructions with two arguments (*make*) or three (*give*), comparison of adjectives, etc. Nevertheless, for many people the concept of syntax remains too closely bound-up with word order alone, and therefore in this paper, the term *grammar* will be used in contexts where Bickerton would probably use syntax.

The emergence of modern human language, with some sort of grammatical system, is paralleled in evolutionary biology by the so-called Cambrian Explosion (cf. Gould 1991 *passim*, Conway Morris 1999:147, 152–53 and Carroll 2006:137–65), which saw the sudden, apparently simultaneous emergence of a wide variety of complex life forms. In both instances we have a leap involving massive increases in complexity. This leap, apparently fast and spontaneous from our perspective so far in the future, would probably have had its share of false starts and steps backward. Fortey (1998:43) suggests that life may have existed as much as 3.8 billion years ago: more than three billion years before the Cambrian Explosion, and it may also have started on Mars, later to be lost again (1998:34). In this context it is perfectly possible that some groups of humans may have developed a sort of proto-language and then lost it, for whatever reason. Lamb's (1999) caveats may also, therefore, be applied to the issue of the origin of life itself. Conway Morris (1999:21–22) offers a similar dating, providing a useful chart to illustrate the sheer time scales involved. Gould (1991:58) points out that for 'nearly 2.4 billion years... all organisms were single-celled creatures of the simplest... design'. Similarly, some form of simple communication will already have existed among prehuman mammals, with possibly increasing degrees of sophistication among the primates. Later on Conway Morris (1999:206) points out that since the first

vertebrates appeared, in the Late Cambrian or early Ordovician, their brains have been becoming increasingly more elaborate in structure, which might suggest a concomitant slow evolution of vocalised communication, to culminate in human language. Both the Cambrian Explosion and the emergence of human language, therefore, might be seen as *qualitatively*, rather than *quantitatively*, new stages: the appearance of complex biological and linguistic structures out of much less complex structures, see also Conway Morris (1999:147, 152–53). Such a parallel scenario may well be applied to Bickerton's proposal of splitting human language into proto-language and language (Bickerton 2000, Calvin & Bickerton 2000).

Thus the emergence of grammar, adapted from Bickerton's hypothesis, might be seen as the closest linguistic equivalent to the Cambrian Explosion in evolutionary biology. In this paper language will hereinafter be assumed to connote language as we understand it today, including grammar.

4. TOOLS/ART. So far, there seems to be something approaching a scholarly consensus that human language is around 30,000–35,000 years old, cf. Décsy (2000).

Based on the first attestations of stone tools, Walker and Shipman (1996:226–27) suggest dating the origin of language to 1,400,000 years BP, thus preceding the emergence of *Homo sapiens* as a distinct species. Ultimately, however, they reject this dating, citing the well-known fact that animals such as chimpanzees make wide use of tools without ever mastering language. They go on to suggest that the origin of language is more likely to be sought in art, which they date to around 125,000 BP at the earliest, although they hint that 25,000–30,000 might be more likely. Many scholars follow Walker and Shipman's reasoning.

5. THE FIRE FACTOR. Recently, however, another factor has been cited. It may push the origin of language much further back into prehistory. In contrast to the large amounts of discussion accorded to the role of tools and art in language origins, starting with Darwin many scholars dealing with the issue of human language origins skirt the issue of control of fire, e.g. Deutscher (2005:12–13), although fire itself has come in for substantial amounts of study, e.g. Perlès (1977). The most complete treatment is offered by Goudsblom (1992:12–41, 2002:28–33), who suggests that the domestication of fire may well have been a turning point in human evolution, insofar as it enabled humans to exercise a previously unparalleled degree of control over their environment. He describes it as 'the first manifestation of human mastery over a strong and potentially destructive force of nature, control over fire was a basic condition for the subsequent emergence of agriculture and industry' (Goudsblom 2002:23). He points out that estimates of when fire was first brought under control by humans differ widely, ranging between 150,000 and 1.5 million years, far back into the Pleistocene (ca. 1,800,000 to 11,550 years BP), e.g., Swartkrans (South Africa; after Dart), Chesowanja (Kenya), 1,400,000–1,500,000, Zhoukoudian (Choukoutien; *Homo erectus*; Beijing man 500,000, etc.), himself suggesting at least 400,000 BP (*ibid*). Similarly Potts (1996:179) puts the oldest widely accepted instances of human domestication of fire between 300,000 (Hungary) and 460,000 BP (China). Diamond (1997:38) appears to date the domestication of fire to a similar period, about 500,000 BP. In this context Dawkins

(2005:59–62), quoting earlier work, suggests that there may have been *three* separate migrations of hominids from Africa, the earliest (*Homo erectus*)⁵ at 1,700,000 BP, then 840,000–420,000 BP, and then 100,000 BP. With increasing degrees of probability, the hominids involved in these migrations could all have had language if the earliest dates for control of fire cited above are accepted, probably the second, and certainly the third migration.

Bickerton (1990:140–41) offers a brief discussion of the relationship between language and fire, suggesting that proto-language may have been enough for humans to control fire. Control of fire is one item that separates humans from non-humans (cf. Bickerton 1990:140–41 and Goudsblom 1992:1), expressed well by the rhetorical question ‘would you leave a chimpanzee in charge of a fire?’, in contrast to many other things that chimpanzees have been found to be able to do. Apparent counterexamples, both of animal control and human non-control, are illusory. Birds of prey have been observed hovering over wildfires to hunt fleeing birds and insects. On occasion they have been observed picking up smouldering twigs and dropping them on dry grass, and this has given rise to the folktale that they do so deliberately, with the aim of spreading the fire and smoking out prey. More probably, however, such twigs are picked up by birds by mistake while hunting for insects, and they are soon forced to drop them (Goudsblom 1992:15), and this has been misinterpreted by casual observers. Chimpanzees have even been taught to smoke in zoos (*ibid.*, p. 25), but there appears to be no evidence of them controlling fire in the wild. This contrasts with many other things, previously thought unique to humans, that chimpanzees have been found to be able to do.

In human history there have been at least two apparent instances of humans not controlling fire to the extent common in most human societies, no matter how primitive: the Andaman Islanders (Goudsblom 1992:204–5) and the Tasmanians (Flannery 1994:264). Bickerton’s (1990:140) brief mention of these cases hints that they may not have mastered it properly. Actually, however, both cases involve cultural retrogression due to prolonged isolation of small communities, where many skills, including firemaking skills, were gradually lost over a prolonged period. As suggested above, we might suggest similar, parallel scenarios where a newly-isolated group of hominids never got beyond the stage of proto-language before they became extinct, or where the pioneers in switching to grammar all died before fully developing it, and none of the survivors took up the slack.

It would appear reasonable, therefore, to devote at least as much discussion to the relationship between control of fire and language as has been done devoted to the relationships between art and tools to language.

Nevertheless, even in the early stages of the process whereby humans gained control of fire, if they were to do anything more with it than simply run away, i.e. to put it out, light it, use it for cooking, burn a given patch (especially in the case of large-scale fires), more sophisticated communication than simply screaming ‘fire!’ (cf. ‘leopard!’, ‘eagle!’) and then taking evasive action, or even perhaps phrases such as ‘wood fire run’⁶ must have been needed, and therefore the domestication of fire may be taken as a *terminus circa quem* for the emergence of human language. To control fire properly some sort of grammar would be needed for communicative purposes, e.g. imperatives (burn/don’t burn this – don’t put the fire out, we might not get it started again), a tense system (e.g. we burned this area last year,

this fire has gone out/will go out), etc. This constitutes a system very probably substantially more sophisticated than the protolanguage as hypothesized by Bickerton (1990).

Grammar and control of fire may well be linked, and in that case, if Bickerton's framework is accepted in outline, the emergence of grammar would have to be pushed back by about 200,000 years to take the fire factor into account.

It is probable, therefore, that humans could not have begun to manipulate fire without language, although this aspect remains unmentioned by Goudsblom (1992, 2002) at this stage. He discusses the process thus:

Humans are the only species that have learned how to manipulate fire. Control over fire has become a 'species monopoly', with an enormous impact on other species, both animals and plants. It provides us with an excellent example of how new forms of behaviour may change the balance of power... the humans... gained greater self-confidence... animals... learned to respect and fear [humans] agility with fire... The domestication of fire made humans less directly dependent on forces that continued to be beyond their control, such as the alternation of day and night and the cycle of the seasons... Since control of fire became a species monopoly, exclusively human and shared equally by all human societies, it made humans everywhere more alike among themselves and more different from all other creatures... hominids may have beaten off other competitors, e.g. australopithecines, as they gradually mastered the use of fire, thus cementing the already growing gap between themselves and other primates. (2002:29–31, see also 1992:21–23)

Surveying the entire trajectory of the human use of fire from its earliest beginnings, we can distinguish three stages. During the first stage, there were no groups possessing fire; there were only groups *without* fire. There must then have been a second stage when there both groups *with* fire and groups *without* fire... a transitional stage leading up to the stage [where] all human groups are groups *with* fire. (Goudsblom 2002:32)

Goudsblom even cites some evidence to suggest that human-generated fires in the Pleistocene may actually have contributed to climate change and extensive deforestation (*ibid.*). Again, any degree of control of fire on the requisite scale would have necessitated the manipulators communicating by means of a language with grammar.⁷ Later on de Vries *et al.* offer a table encompassing various types of human activity, juxtaposing them to control of fire (2002:130).

Human domestication of fire offers a parallel to some discussions of the actual emergence of language, cf. Dixon: 'When language first developed it was like an explosion... [E]ach generation would have added appreciably to the vocabulary they learnt from their parents' (1997:65). Tattersall, however, states that 'the emergence of language... cannot have been an overnight event... language skills did not just show up suddenly in humans' (1999:232, see also Chow 2005:21–22).

This may also be paralleled by the history of the development of writing, which is far better attested: the capacity for writing has been present in humans from the start of human evolution, yet certain groups never discovered, or made use of it, at all (Diamond 1997:236–38,

Tattersall 1999:231). According to such a scenario humanity would currently be at stage three, where all human groups are, or are rapidly becoming, groups with writing.⁸

6. HOMINID PHYSIOLOGY AND VOCAL ORGANS: A POSSIBLE RED HERRING FOR LANGUAGE ORIGINS. From the above discussion it appears all but certain that at least some pre-sapiens hominids (e.g. *Homo erectus/ergaster*, *Homo neanderthalensis*) had language; *Homo ergaster* is known to have used fire and tools (Dawkins 2005:70).⁹ In such discussions it is a commonplace that any language spoken by non-human hominids would have been severely restricted in scope, due to lack of ability to enunciate a full range of vowel sounds. This is often taken as a problem in ascribing human language to non-human hominids.

However, this is not necessarily the case. Human language can make do with a small number of distinctions at the phonological level. Some languages (e.g. Rotokas, Pirahã) make do with around ten or eleven phonemes, and any hypothetical spoken *Neanderthal* and *Ergaster* language may have made do with a far smaller range of vowels than modern languages. As Pinker puts it: 'E lengeege weth e smell nember ef vewels cen remeen quete expresseve' (2000:365); also Deutsche: 'et es perfecte pesseble to have a thoroughle respectable language without the vowel /r/ (2005:13). See also Dawkins (2005:71–72).

However, Dawkins (*ibid.*, p. 71) misses a rather fundamental point here when he says, 'If written Hebrew can be intelligible without vowels, I don't see why spoken Neanderthal and Ergaster couldn't too'. Although Hebrew is conventionally written without vowels, spoken Hebrew maintains a full range of vowels and is perceived as such by hearers. In that context spoken *Neanderthal* and *Ergaster* may well have been perceived by hearers as having a fairly full range of what might be referred to as vowels.

This discussion inevitably leads to the question of whether languages with one vowel actually exist. There is a huge literature on the topic. Attempts to find such a language have been centred on languages from the Caucasus, which on the surface at least, usually have very large numbers of consonants and very few vowels. However, the hypothetical one-vowel language is, however, mostly an artefact of the respective theoretical approach. The claim has been made that Kabardian, for example, is a one-vowel language. See Kuipers (1960:50–51, 104–7) and Colarusso (1992:18, *passim*) for some substantive criticism. On the phonetic level, however, Kabardian sounds as though it has a full range of vowels (cf. Kuipers 1960:23). Vowel quality, however, is predictable from the quality of the flanking consonants, see Comrie (1981:205–7) for a summary and discussion.

In fact, cross-linguistically, vowels are often assimilated/infected by the quality of adjacent consonants. In this context, Manaster Ramer 1994 suggests, citing evidence from Pitta Pitta and Warlpiri, that one-vowel systems may be much commoner than generally believed if the high vowels (i, u) in a classic three-vowel system (a, i, u) are taken to be in complementary distribution with semivowel glides (y, w), thus leaving /a/ as the only purely vocalic segment, with length as a separate feature.

The reconstructed pronunciation of Ancient Egyptian may also come fairly close to a language with a poorly developed vowel system, similar to Pinker's hypothetical example.

Collier and Manley (1998:4) point to the useful device used in reading Ancient Egyptian hieroglyphics, which only has consonants:

We also need to add vowels. The convention normally adopted is to insert an 'e' between each consonant, except in the cases of ʒ and ʔ, where a is used, and w, where u is sometimes used because they are easier to pronounce..., e.g. ʒpdu... Purely for our own convenience we could pronounce this 'apedu'.

Reconstructed Ancient Egyptian has proved to be a language capable of adapting to modern needs, cf. Nunn and Parkinson's translation of Beatrix Potter (2005).

7. QUESTIONS FOR FURTHER RESEARCH. This paper has been tentative in nature and may be concluded by posing a series of questions:

- Even if human domestication of fire is dated as late as 150,000 BP, did humans learn to domesticate fire before they left Africa?
- In the light of Lamb's caveats would a positive answer to this question give a boost to the theory of linguistic monogenesis?
- According to some authorities *Homo erectus* (Goudsblom 1992:17, Swisher, Curtis & Lewin 2000:132) and *Homo neanderthalensis* (Potts 1996:179) mastered the use of fire before the emergence of *Homo sapiens*. In which case would recognisable human language, with grammar, also have predated the emergence of *Homo sapiens* or arisen independently in, e.g., *Homo erectus* and *Homo neanderthalensis*?
- And if the answers to these questions are positive, what would that do to attempts to trace human language back to one single source?

¹ Recognition of the uniqueness of human language was actually fairly late in coming. In a way reminiscent of the semantics of Indonesian *orang* (basically 'man', but extended to other primates, cf. *orang utan*, *orang blanda*, *orang pendek*), the lines between humans and other primates were blurred in the early stages of anthropological and linguistic scholarship, cf. Darwin (2003:520–21, 523–24). Tattersall (1999:58) even cites anecdotes involving earlier scholars believing that apes could speak and understand human language. Quammen (2000:153–55) points out that in 1699 Edward Tyson classified the recently discovered chimpanzee as *Homo*, along with humans, christening it *Homo sylvestris* 'man of the woods' (cf. *orang utan*) as opposed, of course, to *Homo sapiens*. Later scholars set up the family *Pongidae* to accommodate the two species of chimpanzee, the gorilla, and the orang utan. More recently, however, there appears to be a return to Tyson's original classification of chimpanzees and humans in the same genus, cf., the oft-cited 98–99% match between human and chimpanzee DNA. Referring mainly to the career of the Hagenbecks, Rothfels (2002:81–142, 189, *passim*) illustrates this phenomenon by pointing to a practice that modern readers might find grotesque and cruel: the exhibition of numerous people from various remote corners of the world as though they were animals: Laplanders/Sami (82–83), Sudanese (83–84), Greenland Inuit (84–85), Ceylonese/Sri Lankans (85–86), Native Americans (85, *passim*), Tierra del Fuegians (114–19). However, as Rothfels points out, paradoxically, the demise of such shows came with the growing recognition that the people exhibited in them were as human as those who observed them in their enclosures:

...appears to have been the result of the refusal of the exhibited people to comply with the basic dramatic premise of the displays. Rather than be incomprehensible and uncomprehending

- savages, the people in the shows learned German, learned to ask for tips, enjoyed visiting taverns, purchased European clothes, participated in sideline commercial activities involving sexual and other services, and otherwise confounded an audience who came to the zoo to see savages behaving as savages were expected to behave. (2002:194)
- ² As is the case with many other earlier scholars of anthropology and biology, Daines Barrington also made a contribution to linguistics, in this case Cornish studies. Barrington visited Dolly Pen-treath, possibly the last monoglot speaker of Cornish, in 1777, and left an account and suggestions for further research that sound startling modern, see Berresford Ellis (1974:115–19).
 - ³ Cf. Morris: 'It is impossible to prove that all life on Earth can be traced back to a single origin. However, when all the evidence is taken into account, this idea seems very plausible. Thus there is at least circumstantial evidence for the existence of a common ancestor.' (2001:69)
 - ⁴ The model for the raptors in the movie *Jurassic Park*.
 - ⁵ Dawkins uses the term *Homo ergaster* for African *Homo erectus* (2005:71).
 - ⁶ As an example of animals learning behaviour from other animals Baron points out that in the 1920's bluetits in the Southampton area in England learned that the foil caps on milkbottles could easily be pierced, and that the cream on top could be drunk. This behaviour was rapidly picked up by bluetits all over Britain (2004:162–63). Piercing foil caps and gaining instant gratification thereby, however, involves a far lesser degree of sophistication than controlling fire.
 - ⁷ In this context Gee's reconstruction of a relict population of *Homo erectus* (which he identifies with the *orang pendek* of local folklore) in Sumatra becomes implausible for the reasons given above: 'These creatures are found to walk as erect as you or I, *use fire* and make tools, *but have no language*—at least, none we recognise—and do not wear clothes' (2000:222, emphasis added).
Robert E. Howard's *Wings in the Night* includes a nice description of what must have been a proto-language, at the pre-fire stage: 'The akaanas lived in caves, naked like beasts; they knew nothing of fire and ate only fresh, raw meat. But they had a *language of a sort* and acknowledged a king among them'. (2005:??)
 - ⁸ Religion is another phenomenon apparently unique to humans; the concept of non-human religion is mostly confined to imaginative fiction, cf. the epigraph to this paper.
 - ⁹ Dawkins cites approvingly a suggestion by South African anthropologist Philip Tobias that language might pre-date even *Homo ergaster* (2005:71); see also Schoeneman for some more discussion of whether Neanderthals and *Homo erectus* may have had language (2005:81–82).

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A MICRO-ANALYSIS OF LOOKING BEHAVIOR OF AN ENGLISH-SPEAKING AND A CHINESE-SPEAKING CHILD

NANCY PINE
Mount St. Mary's College

ALTHOUGH CONSIDERABLE VARIATION exists among individuals of the same culture, exposure to specific cultural and linguistic patterns affects behaviors. Infants discriminate phonetic contrasts of all languages in their first months, but their perception narrows to the sounds of their speech community within a year (Kuhl 2004:831–33). Deaf babies exposed to sign language from birth (Emmorey 2002:170) produce manual babbling by about 10 to 14 months, whereas hearing babies exposed only to speech do not produce these movements and, instead, map their vocal articulation to the auditory speech patterns of their environment. In a study of 150 Chinese and US children, two- and three-year-olds were found to produce prewriting that mirrors the graphical shapes of their writing communities (Pine 1993). The current study probes in detail, the visual information-seeking behavior of one two-year-old English-speaker from the United States and one two-year-old Chinese-speaker¹ from China in an effort to understand whether they exhibit behaviors that may be linked to their cultural/linguistic communities. The children were both mid-range performers in a larger study (Pine 2005, 2006) investigating visual behavior in the two countries.

1. BACKGROUND TO THE RESEARCH. Both the larger study and the current one investigate subtle nonverbal behavior patterns that may be associated with the children's linguistic communities. They build from studies exploring linguistic relativity such as those by Levinson (2003) and Lucy and Gaskins (2001, 2003) that explore the influence language may have on non-verbal cognition. Comparing languages that map particular concepts differently, they detail the variable effect linguistic coding may have on cognition across cultures. Lucy and Gaskins' studies (2003:479–81) with Yucatec speakers and American English speakers that investigate number-marking patterns show that the nonverbal cognitive responses of adults as well as 9-year-old children agree where the languages agree and differ where the languages differ. Bowerman and Choi (2003:398–411) in their work with Korean speakers and English speakers found that children as young as 18 months, who are in the early linguistic stage, adopt language-specific principles of categorization, but that infants in the prelinguistic stage are less sensitive to such categories. Although the research reported in this paper does not directly address the interplay between language-specific behavior and non-linguistic cognitive skills, it may point toward nonverbal looking behaviors that, in future research, could be mapped against particular language-specific structures or concepts.

1.1. EARLY STUDIES. Several earlier studies (Pine 1997a, 1997b, 2005) investigate whether very young Chinese-speakers and English-speakers exhibit clusters of nonverbally expressed attributes of visual information-seeking behavior that are associated with their specific cultural and linguistic community. The results suggest a clear delineation between the looking behaviors of the two language groups in some categories. For example, the Chinese-speaking children focused more on objects that were less than 15 centimeters in size, while remaining quite still in their own movements; the English-speakers focused on larger objects and moved their hands and bodies more. Another differentiation was the diameter of the area in which the child's body moved while engaged in a looking event. The Chinese children almost always stayed within a 0 to 1 meter diameter even though there was always more space available and the children were not physically constrained. The English-speaking children on the other hand chose to use a much larger area. However, two analytical puzzles stood out in these studies—the problem of children's wandering attention as they engaged in a looking activity and the problem of how to actually code movement, especially since movement patterns hinted at differences between the two groups.

A child's visual focus shifts as distractions come along. Although a child may be absorbed in threading beads onto a string, she may look up if someone walks past or another child tries to take her beads. In addition children's visual focus shifts even while they are looking at one object of focus—for instance, while playing with a toy car they may stop to turn it upside-down and examine its bottom. More confounding are the difficulties of analyzing movement. First, the perceptual concepts embedded in movement while looking are difficult to grasp. For example, when a child is running around a play-yard looking at the world through a sieve, what is he perceiving? What is his object of focus? Secondly, movement is complex to code at even the most basic level. As children move, several parts of their bodies are usually involved. Should these be coded as one or separately—each hand and foot, the trunk and head considered as separate entities? Furthermore, US children appeared to be fascinated by motion. In the play-yard they watched sand being poured from a teacher's shovel or sifted through a sieve for long blocks of time. English-speaking adults were often videotaped jiggling something to get a child to look at it or to entertain. Movement was also involved in what Chinese children looked at, but it appeared to be slower or less pronounced.

Our simplistic solution in the early studies was to code movement only for the whole body and hands, assigning each just one rating on a 4-point scale for an entire event. In addition, the video data had been recorded in a large variety of venues. While retaining the naturally-occurring settings, we needed to record in each country the same number of events from homes, preschool classrooms, and similar public places. We also required a video system² that would permit a fine grained, second-by-second analysis of more clearly defined categories as well as examination of the movement of different parts of children's bodies. Because of the time intensive nature of such an analysis we needed to narrow our data, and we reasoned that examining the looking behavior of one child in each linguistic group who was closest to the means of the analyzed categories might uncover subtle behavior patterns masked by the less detailed differences we had found earlier. This required a two-step process, analyzing better matched data sets and then completing a micro-analysis of the two children's events.

1.2. PRELIMINARY STUDY FOR THE MICRO-ANALYSIS. After videotaping children in each country in similar environments (preschools, homes, parks) we analyzed 26 comparable looking events from each linguistic group using the variables that, in the earlier studies, had shown clear group delineation. A looking event is defined as a time span during which a child looks at one thing in order to investigate it, observe it, or interact with it. The primary mode of interaction is visual, even though other modes are involved. Events include such activities as painting, arranging geometric shapes, watching sand as it is poured through a sieve, and so on. Acting on a suggestion from Marianne Gullberg of the Gesture Group at the Max Planck Institute of Psycholinguistics we added an on-task/off-task variable to address the problem of children's shifting focus. The following were analyzed using their specific parameters (centimeters, meters, seconds, or a point rating) and then, where necessary, converted to a 4-point scale for comparison:

- size of the object of focus
- distance of the object from the child's eyes
- speed of body movement
- space used by the child's body while looking
- speed of hand movement
- length of on-task time segments.

Object size, distance of object from the child's eyes, and diameter of the area the child used were coded in centimeters and meters and then converted to a 4-point scale, with 1 being the smallest distance or diameter, 4 the largest. Body movement and hand movement (considering both hands as one unit) were coded on a scale of 1 to 4, with 1 equaling *still, nearly stationary* (e.g. holding a block still while looking at it; feet resting on a chair rung); 2, *limited movement, wiggling* (e.g. song-related arm or foot motions; the child could be in one place, but was more active than #1); 3, *moderate movement* (e.g. shaking rattles and watching them, walking about while looking at a toy or book), and 4, *very rapid* (e.g. jumping up and down while looking through a view finder; looking at beads in a plastic tube while twirling around on a stool; moving a drawing back and forth quickly while looking at it). Example video clips at each level were used for judgment calibration. The body and hand movement variables were assigned only one rating per event. On-task time was calculated by identifying when a child was looking at the object of focus. The on-task times were then calculated as a proportion of the total length of the looking event.

Figure 1 (overleaf) shows the mean score for the 6 variables for the 26 events of each linguistic group. The error bars are the standard error of the mean, found from the variances. The analysis shows a significant difference ($p < .05$) between the two linguistic groups on four variables—object size, body movement, hand movement, and on-task time. For those variables, the difference in the means was greater than twice its uncertainty. The Chinese-speaking children in this data set focus on smaller objects for longer periods of time than their English-speaking counterparts, and their body and hand movements are slower. The more systematized data collection sharpened some of the group differences compared with

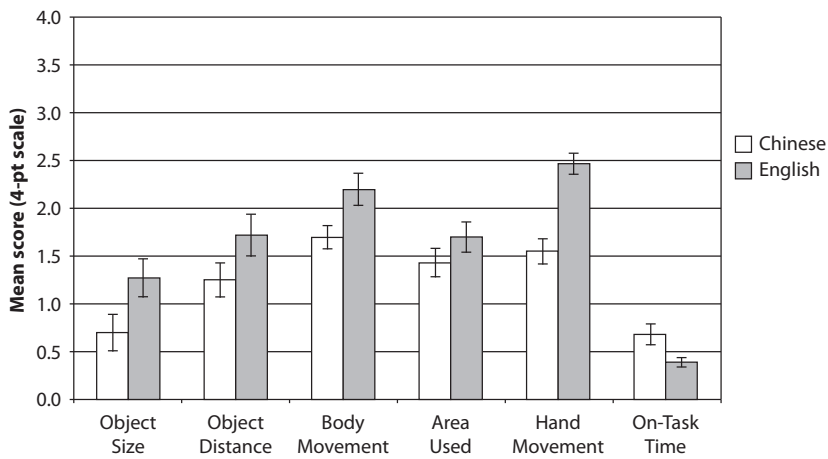


Figure 1. Looking behavior variables for Chinese-speaking and English-speaking children, 26 events for each linguistic group. Ratings converted to a 4-point scale in which 1 is the smallest or slowest, 4 the highest or quickest.

the more holistic earlier studies, while it diminished the differences of other variables—especially the area used by the children.

2. SELECTION OF THE TWO CHILDREN. The two children were selected for the micro-analysis by computing the mean within each category and language group for the cohort of the preliminary study and then selecting the child from each language group that ranked closest to the mean averages across all categories. Since both of the selected children had been videotaped during more than one looking event, we then selected the looking event closest to the group means for each child.

The characteristics of the two identified children and events are listed in **Table 1**. By chance the two children were male. The Chinese-speaking child is playing with water toys in a low sink in the family’s apartment bathroom. His mother and a family friend (the videographer) are present, talking with each other from time to time. Occasionally the videographer asks the child a question—e.g. does he attend preschool yet. He responds to these questions, looking up as he does. Twice his mother intervenes in his play—once to suggest using a particular toy (which he does not do) and once to suggest picking up a toy that had dropped on the floor (which he does). The English-speaking child is sitting at a table in his preschool classroom where two children are painting and two waiting to paint. At the beginning of the event he is waiting at the end of the table and poking his finger into a paint tray near him; part way through the event, he moves to another chair and begins painting. The teacher is monitoring the painting and a few other activities in the room. While he is waiting she tells him to stop fiddling with the paints and wait his turn. Later she tells him it is his turn to paint and to move to another chair, which he does. At one point someone walks by and attracts his attention, and at another the teacher helps him take off his jacket. Although these two events represent those closest to the mean in each linguistic

	Chinese-speaking child (CHI)	English-speaking child (US1)
Age	2 yrs 3 mos	2 yrs 7 mos
Language	Chinese	English
Sex	male	male
Environment	home	preschool
Activity	playing with water toys in low sink	making paint prints with plastic baskets
Total of event length	163 seconds	256 seconds
Adult present	mother + videographer	teacher + videographer
Adult directions to child	minimal	minimal

Table 1. Characteristics of the 2 identified children and the looking events closest to their group means.

group across all categories, it must be kept in mind that the environments of the events are considerably different—the Chinese-speaking child at home with his mother, the English-speaking child in a preschool toddler center with several other children and a teacher.

3. CATEGORIES FOR MICRO-ANALYSIS. The purpose of selecting two children central to their language-group means was to uncover patterns subtler than those found in earlier studies. Therefore the categories selected for the micro-analysis are different from the variables used in the preliminary study and reflect the most challenging analytical areas confronting us. Two of these—on-task times and speed of body movement—had been used in the preliminary study but needed more detailed coding; several other variables related to movement were added, as well as head tilt. The final list of categories analyzed for the micro-analytic study were:

- on-task times
- speed of object of focus
- speed of body movement
- speed of right hand movement
- speed of left hand movement.

All movement variables were rated on a 4-point scale for each episode—1 being *still*; *nearly stationary*; 4 being *very rapid*. Head tilt and foot movement speed, though coded, were omitted from the final analysis because they did not appear relevant to the particular events being examined.³

Three types of time categories—*event*, *segment*, and *episode*—allowed us to identify and compare different elements of the children's movements and looking behaviors. An *event* ranges from 1 to 5 minutes and is the time span during which a child looks predominately at one thing (e.g. a car, a doll, a book) or an associated set of things (e.g. a few water toys,

On-task Segment #	CHINESE-SPEAKING		ENGLISH-SPEAKING	
	Duration	Fractional	Duration	Fractional
1	5.09	0.04	26.00	0.14
2	19.94	0.16	6.98	0.04
3	12.00	0.09	1.99	0.01
4	6.00	0.05	2.34	0.01
5	4.99	0.04	8.00	0.04
6	13.02	0.10	4.99	0.03
7	4.30	0.03	4.99	0.03
8	22.99	0.18	0.99	0.01
9	26.99	0.21	21.00	0.11
10	11.00	0.09	45.99	0.25
11	—	—	23.00	0.12
12	—	—	40.99	0.22
Total (secs)	126.32		187.26	
Proportion of total time	0.78		0.73	
Mean	12.63		15.61	

Table 2. On-task segments for the Chinese-speaking and English-speaking children. Reported in real time (seconds) and fractional time.

a painting and the brush being used, a set of blocks). It ends when the child changes to a different activity, is out of view of the camera, or when the video has followed the child for 5 minutes. Any event less than a minute was eliminated. An event is separated into *on-task time segments* and *off-task time segments*. In one event, for example, a child looks at and manipulates a set of pattern blocks for 4 minutes and 34 seconds; it ends when the teacher tells her to clean up. During that event she looks at and uses the blocks most of the time (on-task segments), but she looks away from them 3 times (off-task segments)—once when the teacher passes by, once when another child wants to take two red blocks, and once when she sneezes. These are coded as:

- on-task: 1 minute 23 seconds
- off-task: 0 minutes 8 seconds (teacher walks by)
- on-task: 0 minutes 36 seconds
- off-task: 0 minutes 16 seconds (other child wants blocks)
- on-task: 1 minute 18 seconds
- off-task: 0 minutes 6 seconds (sneezes)
- on-task: 0 minutes 47 seconds.

The final analysis looked only at on-task segments. For a given event, the total of the time segments is the same as the total event time. The same time segments apply to all the movement variables (hands, feet, etc.) of an event.

Episodes are sub-units within on-task segments, often only a few seconds long. They usually denote a slight focus shift (e.g. looking at a different part of a car) or movement speed level change. Each episode has a speed-level rating. Different variables had their own episode structure—e.g., the left-hand-movement episode structure for a given child could be quite different from the child's right-hand-movement episode structure. (A sample list of episodes for each child is given in 4.2 below.)

My primary collaborator in China, Yu Zhenyou, and I spent many hours refining rating judgments until we were aligned. Many areas of rating were remarkably clear with little need for adjustment, including when on-task and off-task segments as well as episodes began and ended. This accuracy was facilitated by the ELAN software (see note 2) that enables analysis at varied speeds and coordination of multiple categories.⁴ Others—e.g. the difference between levels 3 and 4 for hand movements—took considerable practice and refining. In the final study I did all coding for the two children, with Yu doing periodic checks.⁵

4. RESULTS. Because each child's event was characterized by several on-task segments that were significantly longer than others, we investigated the difference in performance between the long and short segments. With no differences found for these varied time segments, we looked at variables across all segments—again finding striking similarities between the two children even though adults viewing the videos commented on differences. It was only when we separated out the highest speed levels, that we found what appear to be interesting differences worth further investigation.

4.1. ON-TASK TIME SEGMENTS. The on-task time segment comparisons (**Table 2**) were essentially equal. Although the total length of the children's on-task segments was quite different (126 seconds for CHI, 187 for USI) the proportion of on-task times to the total event times is similar. The mean length of the time segments for the two children was also comparable. The occurrence and position of several significantly long segments is of mild interest, but still rather similar for the two children—occurring at the beginning and end of each event with rapid changes from on-task to off-task in the middle.

4.2. SPEED LEVELS OF MOVEMENT VARIABLES. The four movement variables—object of focus, body, right hand, and left hand—were rated for levels of speed on the 4-point scale from *still* to *very rapid*. Each episode for each variable was rated by level, and then weighted by duration (in seconds) to arrive at a weighted speed level (**Table 3**, overleaf). The levels for the 2 children showed no significant patterns of difference. The mean-weighted rates are startlingly similar, with the Chinese-speaking child rated slightly faster than the English speaker in body and right-hand movement.

Nevertheless, when adults view the videotapes of the other culture's children during looking events they almost always comment on differences. The US adults often describe the Chinese children as *calm*, *still*, and *very focused*, whereas Chinese adults tend to

Movement variable	CHINESE-SPEAKING	ENGLISH-SPEAKING
Object of focus	1.82	1.86
Body	1.73	1.52
Hand right	1.73	1.57
Hand left	1.68	1.73

Table 3. Mean-weighted level of speed for each movement variable, all on-task episodes, for the Chinese-speaking and English-speaking children.

Movement Variables/ Speed Levels		CHINESE-SPEAKING				ENGLISH-SPEAKING			
		Tt	Ft	MI	Freq	Tt	Ft	MI	Freq
Object of Focus	Level 3	5.20	0.05	1.73	3	29.67	0.19	1.98	15
	Level 4	0.00	0.00	0.00	0	1.57	0.01	1.57	1
Body	Level 3	6.71	0.05	3.36	2	19.85	0.11	2.21	9
	Level 4	0.00	0.00	0.00	0	0.00	0.00	0.00	0
Hand Right	Level 3	8.72	0.07	2.18	4	23.25	0.13	1.45	16
	Level 4	0.00	0.00	0.00	0	2.31	0.01	1.16	2
Hand Left	Level 3	5.23	0.04	2.62	2	29.77	0.16	1.98	15
	Level 4	0.00	0.00	0.00	0	1.66	0.01	0.83	2

Table 4. Total length of time expended at levels 3 and 4 by each child for the 4 movement variables. **Tt** = total time (seconds), **Ft** = fractional time, **MI** = mean length (seconds), **Freq** = frequency.

describe US children as *very active*, *busy*, and doing something *risky* or even sometimes *dangerous*. Also, during the coding process it was apparent that there were differences, with different patterns of speed levels appearing. For example, the English-speaking child had a sprinkling of level 3 and 4 episodes throughout each of the movement variables whereas the Chinese child did not. These patterns along with the adult descriptions of the other culture's videotapes kept raising the question of what we were missing in the analysis.

Isolating the most rapid movements (**Table 4**) reveals how much more the English-speaking child (US1) used these levels than the Chinese-speaking child (CH1). US1 used significantly more time, proportionally, at these levels and at more frequent intervals. US1 used brief spurts of level 3 and level 4 motions, while CH1 seldom raised his to level 3, and never to level 4. In previous analyses the English-speaking child's long periods of time spent at level 1 masked the affects of his levels 3 and 4 movement.

Furthermore, examination of where levels 3 and 4 occur in relation to levels 1 and 2 reveals different level sequencing patterns between the Chinese-speaking and English-speaking child. Two US1 sequence patterns are apparent for levels 3 and 4. He often moves abruptly from a level 1 speed to 3 and back to 1. Two of his level 4 occurrences explode

Speed Level	Movement Description for CHI
1	Hand near waist
2	Reaches down into water
2	Lifts red water wheel
2	Fiddles with red water wheel
2	Moves hand to sink edge
1	Rests hand on sink edge
2	Fishes for and picks up blue toy
2	Pokes at red toy with blue toy
2	Picks up funnel with both hands

Table 5. Movement rates for Chinese child.

Speed Level	Movement Description for US1
1	Inspects lower arm (for paint?)
3	Reaches for basket; moves it to paint tray
2	Puts basket in paint, moving it up and down
1	Presses down on basket
3	Picks it up & moves it over paper
1	Holds basket above paper
3	Moves basket to right; puts it down on paper
1	Pushes it down on paper w/both hands
3	Lifts basket w/both hands; moves it to paint tray

Table 6. Movement rates for US child.

directly from and/or return immediately to level 1—sequences 1,4,1 and 1,2,4,1 respectively. The Chinese child, on the other hand, on those few occasions when he does increase the speed of his movement to level 3, embeds it in a progression—e.g. 1321 or 132221. In addition, twice during each event variable US1 moves from level 1 (*still*) to 2 then to 3 and maintains his movement at level 3 across two episodes before slowing—e.g., 12331.

Another pattern involves the variety of sequence in the use of speed levels. The Chinese child maintains movement at the same speed level across many episodes of movement shifts. For instance, a 20-second example of his right-hand episodes shows that although his hand is moving from one toy to another and moving the toys around, his rate of speed remains steady (Table 5).

In contrast, the US child shows much more variety in the sequencing of changing speeds. A typical right-hand motion sequence for him progresses as shown in Table 6. The English-speaking child exhibits continuous speed level change at every small movement shift, while

the Chinese-speaking child holds his speed level relatively steady even though he is moving his hands and often his body. These longer periods at a given level lend a steadiness to his looking. One can conjecture that both the continuous variety of speed levels of US1 compared with the maintenance of one level during several movement and focus shifts by CH1 would cause a video viewer to describe the US child as more active and the Chinese child as more focused and still. The fact that the level 3 and 4 occurrences of the object, body, left hand and right hand are somewhat synchronized may also make them more noticeable.

5. DISCUSSION. Investigating the question of whether such movement patterns are associated with English and Chinese language structures and concepts lies well in the future. For the present, evidence is accruing (cf. Lucy & Gaskins 2003; Emmorey 2002) that the language one uses can enhance specific cognitive processes. These language-specific processes do not alter the across-the-board nature of cognitive processing. Emmorey (2002:270) reports, for instance, that several visuospatial cognitive domains, such as motion analysis and spatial memory, have shown an effect from sign language use, but other visuospatial areas that seem connected (e.g. memory of visual images) have in fact remained unaffected. Habitual use appears to make individuals more adept at coding certain types of information while not affecting them in other seemingly related areas.

5.1. LANGUAGE AND GESTURE. A few distinct differences between the processing structures of Chinese and English have been uncovered, but great caution must be exercised before connecting one finding to another. McNeill & Duncan (2000:148–54), comparing the relation of gesture to the language structure of English and Chinese speakers, have shown that Mandarin speakers differ from English speakers in how they time gestures within phrases. While English speakers perform an action-related gesture in close association with the lexical verb being used, Mandarin speakers, in contrast, are likely to place an action-depicting gesture at the head of the phrase even though, in words, only the topic and not its action has been stated. It appears that the Mandarin structure affects gesture placement and that particular discourse structure elements may influence where a gesture phrase is placed in time. Although the current study looks at movement that is generally not associated with speech and has been coded from a nonverbal perspective, it would be productive to probe whether the differences of speed found here at levels 3 and 4 are precursors of some gesture patterns.

5.2. PATTERN VARIATION BETWEEN CHINESE-SPEAKING AND ENGLISH-SPEAKING CHILDREN. The emphasis of variation in the English-speaking child and the more steady movement levels of the Chinese-speaking child are echoed in two other studies—in the prewriting of two- and three-year-olds (Pine 1993) and in how Chinese and US adults hold young children (Pine 2005). In both cases the US participants exhibit a penchant for variety. The size of the US children's prewriting configurations (the marks preliterate children often make when pretending to write) varied widely at all ages, whereas the size of the Chinese children's configurations became steadily smaller with age and had more size consistency at all ages. In a study of adult interactions with young children, Chinese adults were found to hold babies and toddlers in an almost identical position with the child's

head at eye level with the adult's eyes, whereas US adults were observed holding children in 10 distinct positions, varying from high on the hip with the child looking in a number of directions to flat against their bodies with their heads covered (Pine 1997:9). Although we cannot assume that these reveal perceptual development patterns that differentiate the two linguistic groups, it is worth noting that in these two studies plus the current one, the US samples exhibit a wide variation of behaviors, the Chinese samples a smaller variation.

5.3. THE IMPORTANCE OF DETAILS. We have found that the devil is indeed in the details. Our detailed coding and analyses, though critical for providing foundation information, yielded nothing of interest until we stepped back and listened to the remarks of the adults viewing video data of the other culture's looking events. Their spontaneous observations that the child from the other culture exhibited different behaviors were hard to ignore. It was this qualitative data, supplemented by our own coding-related hunches that the looking behavior of children from the two groups seemed somewhat different, that led us to look in detail at level 3 and 4 movement data. Only then did we find the marked differences between the English-speaking and Chinese-speaking child. Whether these different movement speeds and sequences are associated with specific language use is unknown.

Levinson (2003:43) has pointed out that the details of the world in which children interact will inform discerning toddlers again and again until they learn the detailed behaviors that are distributed throughout the language learning environment. From this perspective the nonverbal habits and incremental movements exhibited in the differentiated patterns of the two children in this study may help us to understand the interplay of movement, gestures, and speech.

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- ¹ Chinese refers to Putonghua, the 'common language'; data were collected in the People's Republic of China.
 - ² We selected ELAN (EUDICO Linguistic Annotator) software developed for the analysis of language, sign language, and gesture by the Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands. Analyses of each part of the body within an event can be viewed simultaneously and the speed slowed to allow detailed movement analysis. Versions 2.3 and 2.4 for OS X were used. Last downloaded July 2006, <http://www.mpi.nl/tools>
 - ³ Head tilt was controlled by the placement of materials—the Chinese-speaking child looking down at the sink while standing beside it; the English-speaking child looking down at his painting and hands from a sitting position. The feet of the 2 children were seldom visible in the videos.
 - ⁴ Accuracy was also facilitated by discussions with researchers in the gesture group at the Max Planck Institute of Psycholinguistics and learning how they identify the on-set and trajectory of gestures. A special thanks is due Nick Enfield for organizing my many meetings there.
 - ⁵ Yu Zhenyou has been central to this research. His early childhood expertise, careful collection of video data, and hours of discussion about coding parameters have been invaluable. Thanks also go to my Chinese colleagues who contributed to earlier looking-behavior studies, especially to Qiu Wei and her family and Zhang Yafei.

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THE ROLE OF MENTAL IMAGERY IN SLA

ADINA POSTICA & DOUGLAS W. COLEMAN
University of Toledo

IF ‘LANGUAGE’ DOES NOT EXIST in the physical domain apart from people (Yngve 1996:1–13), what, then, is the input that communicating individuals receive in order to be able to communicate? Chomsky has long assumed (e.g. 1964:26) that it consists of ‘the primary linguistic data,’ i.e. of well-formed sentences.¹ But a scientific account—one which focuses on the physical, rather than the logical domain—cannot take this claim seriously. This paper looks at input-related issues in regard to second language acquisition (SLA) both from a traditional and from a human linguistics perspective, before presenting an experiment that focuses on one aspect of real-world input.

1. INPUT IN SLA. In a traditional, that is to say, logical-domain view, input in SLA consists of samples of the target language (TL) that are available to learners. The target language ‘comes from a variety of sources including the language that the learner hears (e.g. in the classroom by the teacher, outside of the classroom by speakers of the second language), reads (in textbooks, in other reading materials), or sees, in the case of a signed language’ (Gass 2000:31).

1.1. COMPREHENSIBLE INPUT. Comprehension and input are long-standing concerns in the field of second language acquisition. Krashen coined the term *comprehensible input* and made it central to second language acquisition theory. Five hypotheses are part of this theory, the most important one being the Input Hypothesis:

[W]e acquire language in an amazingly simple way—when we understand messages. We have tried everything else—learning grammar rules, memorizing vocabulary, using expensive machinery, forms of group therapy, etc. What has escaped us all these years, however, is the one essential ingredient: comprehensible input. (1985:vii)

Recently, Krashen has further emphasized his conviction that comprehension is key in SLA, and that ‘mere input is not enough; it must be understood’. The Input Hypothesis thus became the Input/Comprehension Hypothesis (2003:4–5).

Krashen follows in Chomsky’s footsteps, viewing input as consisting of language, or ‘the primary linguistic data’. Language, he says, is acquired effortlessly and involuntarily and processed by ‘what Chomsky has called the “language acquisition device”, the part of the brain responsible for language acquisition’ (*ibid*:6), eventually to be converted into a grammar (Chomsky 1964:26). Yet Krashen has consistently deviated from Chomsky’s position by proposing that along with language input the learner also needs ‘extra-linguistic context’

(1985:2). 'Comprehending messages is the only way language is acquired,' Krashen insists. He also claims that the input is comprehensible because 'of our previously acquired linguistic competence, *as well as our extra-linguistic knowledge, which includes our knowledge of the world and our knowledge of the situation*' (2003:4, emphasis added).

However, the assumption that input contains language has been shown to be false (e.g., Klein 1986, Yngve 1996, Coleman 2005). Wolfgang Klein describes a thought experiment, the Chinese Room, which shows that Chomsky's primary linguistic data cannot be a component of comprehensible input. 'Suppose you were locked in a room and were continually exposed to the sound of Chinese coming from a loudspeaker; however long the experiment continued, you would not end up speaking Chinese' (1986:44). This might at first glance seem to support Krashen's comprehensible input theory. Yet, as Klein says, 'what makes learning possible is the information received *in parallel* to the linguistic input in the narrower sense (the sound waves)' (*ibid*). The 'linguistic input in the narrower sense' is the 'sound waves'! Indeed, these are what is physically real—not 'language'. In fact, if language were contained in the input, the Chinese Room would work to the extent that the learner would exit the room with grammatical knowledge of Chinese, even if he/she still could not apply that knowledge to real-life interactions. This is not the case though. The Chinese Room does not 'work' in any sense. Krashen is right about comprehensible input—about the extra-linguistic knowledge necessary for successful communication—yet he is wrong in his assumption that language exists in the physical world and can be part of input.

1.2. INPUT FOR LEARNING TO COMMUNICATE. If language is not part of comprehensible input, how do learners in traditional classroom environments apparently lacking in comprehensible input acquire communicative ability? To understand how comprehension and input affect a person learning to communicate requires that we discuss them in the real-world terms of Yngve's framework. From a human linguistics perspective, the analysis of comprehension and input in the physical domain leads to the following conclusion: "Comprehension" in a real-world sense is a physical change in state in one of the participants as a result of linkage events. Its causes can include information in any of several channels in the linkage' (Coleman 2005:208). Input is '*the full range of sensory experience available to the learner at a given time*' (*ibid*:207). Thus, in human linguistics, input is the full range of sensory experience available to learners. In order to avoid further domain confusions, we will be referring to the full range of sensory experience available to learners that triggers a change in their physical state (*ibid*) as *input for learning to communicate*.

2. A CONUNDRUM? Most foreign language learners are faced with textbooks containing translated dialogues, vocabulary lists, and the occasional illustration provided for window-dressing, accompanied by audiotapes and perhaps videotapes (but the latter all too often with speakers appearing as mere 'talking heads' against a backdrop). According to Krashen's Input/Comprehension Hypothesis, learning (what he calls language acquisition) should not be possible in these circumstances. In this, he must be correct. The lack of necessary information 'received in parallel' (Klein 1986:44) to the speech (or text) leaves learners no

way for them to associate those aspects of 'the linguistic input in the narrower sense' (*ibid*) with anything else in their experience.

Thus, we should be very surprised that generations of teachers stand witness to their learners' (albeit highly variable) success under the conditions described above. Most learners are in the Chinese Room. Still, they often find their way out (if only into the hallway). How?

Above, we defined input for learning to communicate as consisting of the full range of sensory experience available to the learner that triggers a change in their physical state. Neuroscience research has long established that changes in the internal properties of a human organism that lead to the learned communicative behaviors occur in the brain (Bloom *et al.* 2001:316–58). Some learners manifest the same internal changes and their related behaviors in the absence of external input. This observation allows us to hypothesize that in the absence of external input, the brain is able to trigger changes within itself, and these changes substitute for that type of input. In support of this hypothesis comes the idea that the environment is a source of 'perturbations and not of instructions' for the living being (Maturana & Varela 1992:96). In other words, 'the perturbations of the environment do not determine what happens to the living being; rather, it is the structure of the living being that determines what change occurs in it' (*ibid*:95–96). The process that allows neural circuits to work as usual in the absence of electrical impulses received from the motor-sensory receptors, thus allowing humans to recreate scenes, sounds or smells in their brain, is called mental imagery (Bloom *et al.* 2001:344) and has been studied intensively since the 1950's, both in cognitive psychology and later in neuroscience.

3. MENTAL IMAGERY. Since human communication has for millennia been supposed to happen through the use of language, the brain has been most often perceived as possibly containing the organ that processes language (Chomsky 1975). As early as the second century A.D., dissectors of animal brains had discovered that the brain was the center of the system of nerves that conferred the human body sensory and motor abilities (Bloom *et al.* 2001:9). In subsequent centuries, much was learned about the anatomy of the brain, and some about the role the brain plays in coordinating an individual's existence, yet research on the organization and functioning of the brain has never recorded such progress as in the second half of the twentieth century, and into the twenty-first. The study of the brain nowadays interests scientists from a wide range of disciplines and neuroscience is the modern field of research on the brain. The general purpose of neuroscience is 'to link the biological and chemical properties of the brain and its component cells to behavior' (*ibid*:10), and the fundamental premise on which it builds reads as follows.

All the normal functions of the healthy brain and the disorders of the diseased brain, no matter how complex, are ultimately explainable in terms of the basic structural components of the brain and their function. (*ibid* 2001:3)

Any change in the properties of a human organism, external or internal, within or beyond our conscious awareness, is the result of brain activity; in other words, any such change is the result of events taking place in specific, definable locations within the brain. Given the

complexity of the brain, and the still extremely limited knowledge researchers have of the processes of its internal functioning, it is understandable that not all the events have been explained yet in terms of the particular parts of the brain involved and their precise roles in creating these events (*ibid*:3–4). Modern researchers, however, are able to theorize, in the scientific tradition of the past two centuries, about brain activity based on concrete observations and extrapolate from already existent models of neurological activity that rely on evidence processed from data obtained with some of the most advanced technology of our times.

Techniques such as positron emission tomography (PET), magnetic resonance imaging (MRI), and functional magnetic resonance imaging (fMRI) allow us to view the structure of living brains and make reasonable inferences about the way they work. Tracer techniques have revealed some of the complex pathways of the brain. Computer systems that generate and analyze speech have shown that human vocal communication is a key element that makes it possible for us to transmit complex thoughts to each other at rates unattainable by other means. (Lieberman 1998:xv)

As a direct consequence of its object of study, neuroscience is concerned with the study of human communication. Given the neuroimaging data collection instruments, the study of human communication has already begun its transformation from a series of theoretical assumptions into a corpus of hard science data that can be analyzed and processed, and that will provide explanations of human communicative behaviors that withstand the test of the physical domain.

Mental imagery is a result of brain activity that remained until fairly recently a puzzle for researchers. Little was known about mental imagery until the 1970's, although imagery events had been observed and recorded and speculated on for millennia. 'Mental images were at the heart of early theories of mental activity, dating at least as far back as the classic Greek philosophers and figuring predominantly in both philosophy (until the 19th century) and early scientific psychology' (Kosslyn *et al.* 2006:4). The reality of the phenomenon of mental imagery was first suggested on the basis of observations of subjects self-reporting the internal events that led to their accomplishing a task in the absence of an actual external stimulus.

Over time, imagery has been seen as playing an important role in memory, problem solving, creativity, emotion, and communication (*ibid*). 'Imagery is a basic form of cognition and plays a central role in many human activities—ranging from navigation to memory to creative problem solving... It is likely to be one of the first higher cognitive functions that will be firmly rooted in the brain' (Kosslyn 1983:1). A mental image is defined as the neurological event that occurs

when a representation of the type created during the initial phases of perception is present but the stimulus is not actually being perceived; such representations preserve the perceptible properties of the stimulus and ultimately give rise to the subjective experience of perception. (Kosslyn *et al.* 2006:4)

Neuroimaging techniques have allowed for the gathering of an impressive corpus of data that supports the theory that mental images are actual re-creations, at the neural level, of real-world stimuli, yet are constructed in the absence of (new) real-world stimuli. Although so far it has been the study of visual mental images that yielded the most conclusive results, mental imagery is not limited to the visual modality. Researchers posit that the brain recreates visual, auditory, tactile experiences, etc. when perceptual memories are retrieved (*ibid*); mental imagery is thus viewed as a main constituent of an 'integrated and unified composite of diverse sensory images—visual, auditory, tactile, olfactory and others' (Damasio 1999:115).

The specialization of brain regions for the processing of sensorimotor information has been long known and categorized (Bloom *et al.* 2001:9–23). The involvement of specific brain regions in the processing of speech and other aspects of communication was already under scrutiny in the second half of the nineteenth century (*ibid*:328–29). In the past four decades, neuroimaging has led to the discovery that mental images rely on the same neural circuits involved in actual perception. The overview of studies of visual mental images in the brain presented by Kosslyn *et al.* provide compelling evidence to support the assumption that 'visual imagery evokes many of the same processing mechanisms used in visual perception' (2006:135). Other research not included in the mentioned overview further supports the idea of an overlap of the neural pathways involved in mental imagery and actual perception. Bunzeck *et al.* (2005) show that auditory imagery and the perception of complex sounds share the same neural pathways. Helene and Xavier (2006) demonstrates that imagery training without actual task performance has a similar effect on working memory and the acquisition of implicit knowledge as task performance.

Recent research suggests the possibility that mental imagery may be of potentially great interest for the study of human communication, as it may help explain the how human communicative behaviors can arise in the absence of 'the information received *in parallel* to the linguistic input in the narrower sense' (Klein 1986:44). Since the brain structures involved in mental imagery and sensory perception overlap, it might so happen that the needed 'information received in parallel' might be supplied within the brain from perceptual memories (as mental images) in the absence of external perceptual stimuli of the same type. This would explain how, in the absence of input for learning to communicate (Coleman 2005 *passim*), changes in internal properties nevertheless occur in some learners, allowing them to develop new communicative abilities.

4. EXPERIMENT. We came to suspect that learners in traditional classroom environments lacking in comprehensible input who are able to acquire communicative ability succeed in finding their way out of the Chinese Room when their brain compensates for the lack of appropriate external input. We wondered whether it were possible that learners make use of the translations that usually come with dialogues, sample sentences, exercises, etc., to create mental imagery which substitutes for 'the information received *in parallel*' (Klein 1986:44).

4.1. SUBJECTS. Subjects (N = 161) were all students at the University of Toledo, both undergraduate and graduate, enrolled in composition as well as linguistics courses in the

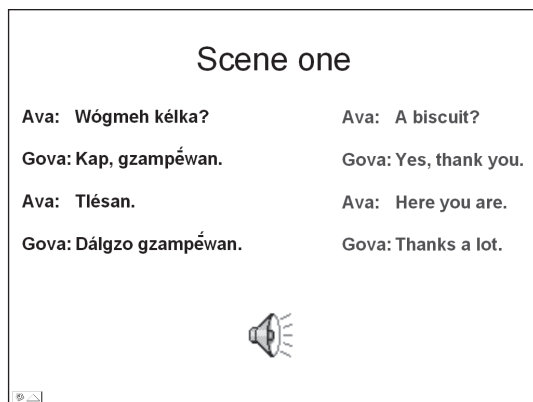


Figure 1. Sample dialogue segment (PowerPoint screenshot) used in the initial training phase.

Department of English in the spring semester of 2006. Subjects were divided across two experimental procedures in which we used for part of the input a collection of marks and sounds that we named *Térus*.² The first ($n_m = 69$) was a memory test to assess subjects' ability to produce output identical to the previously observed output of a participant in the same type of linkage. The second ($n_c = 92$) was a comprehension test to assess subjects' ability to produce meaningful output.

4.2. PROCEDURE. In the initial training phase in both experiments, subjects could see the written text of a short, three-part dialogue between two characters named Ava and Gova. The corresponding auditory input was played three times in a row, at five second intervals. An example of a scene used in the training stage is shown in **Figure 1**. In the next phase, subjects were given five minutes to study individually, using a study sheet showing the full text of all three dialogue segments and a vocabulary list with translations. Subjects were told to prepare for a short quiz in which they would have to take on Gova's role in the conversation. Their study sheets were collected before they were tested. Both groups were treated the same until the test phase.

The quiz in the memory experiment tested the ability to memorize the dialogue; the quiz in the comprehension experiment tested the ability to communicate effectively. Each quiz consisted of six multiple-choice items presented via video clips.³ For the memory test, subjects simply had to recall Gova's exact response (*Dálgo gzampéwan*) and correctly identify it (C) among the four choices given in each quiz item (**Figure 2**).

In the comprehension test, Gova's original response did not appear. Each item contained two unrelated distractors; the other two choices partially matched Gova's original response (in item 2, shown in **Figure 3**, these are B and C); however, only one choice could actually be said to be appropriate to the communicative situation, based on information provided in the original dialogues. To perform correctly in the comprehension test, subjects had to choose the only answer (*Gzampéwan*) appropriate to the actual events depicted in the dialogue and the video clip (**Figure 3**).

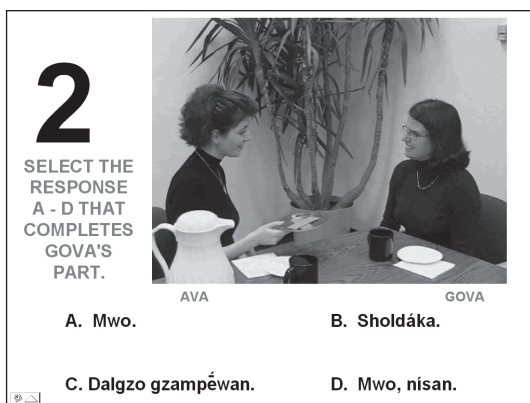


Figure 2. Memory test quiz item.⁴

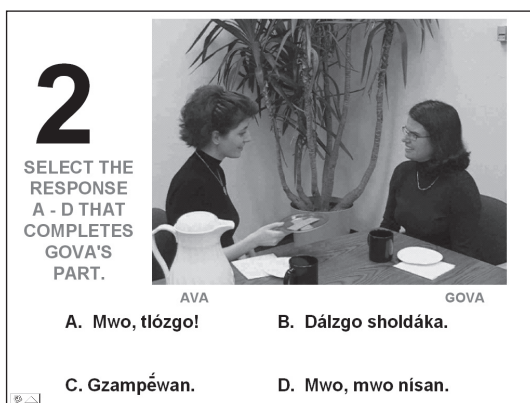


Figure 3. Comprehension test quiz item.

The answer sheet also asked subjects to fill in a number of self-report items that were used as additional variables in the statistical analysis. They were asked to check which of several learning strategies they used during the study phase of the experiment, each being identified as a binary variable. These included reading 'aloud' ('I silently read the dialogs "out loud" to myself over and over'); using mental imagery to picture the events in the dialogues ('I tried to picture Ava and Gova having their conversation');⁵ studying the vocabulary list ('I went over the vocabulary list, testing myself item by item'); (un)covering lines of the dialogue one-by-one ('I covered up the next line of each dialog, to see if I could guess what it was'); trying to recall the sound of the voices on the tape ('I tried to remember how Ava and Gova's voices sounded as I read their lines to myself'); and focusing mainly on the target-language dialogues ('I focused mainly on the Terus dialogs instead of the English, trying to remember how to translate them as I went'). Two additional items asked subjects to provide information relative to their previous learning experience: the total number of foreign languages studied and the total number of years of all foreign language study.

4.3. RESULTS. An independent test showed the number of foreign languages studied correlated significantly with the number of years of foreign language study, but only weakly (memory test: $r = 0.47$, d.f. = 68, $p < 0.01$; comprehension test: $r = 0.40$, d.f. = 91, $p < 0.01$).

All of the study strategies reported as having been used/not used during the study phase were considered as possible predictors of accuracy, as were the number of foreign languages studied and the number of years of foreign language study. No correlations among these variables with absolute values greater than 0.5 were found, meaning multicollinearity was not an issue. Also, no residual autocorrelations among predictor variables were apparent in data from either test group.

For general regression analyses (below), accuracy was measured in terms of the number of items correct on the respective test, memory/comprehension (with a possible score of 0–6); for the logistic regression analyses, accuracy had to be considered in terms of binomial values (accurate: 80% or higher correct, inaccurate: less than 80% correct).

4.3.1. MEMORY TEST. Using a general linear regression model to identify the contribution of each factor to the prediction of test accuracy on the *memory* test, we found only the number of years of foreign language study could be retained in the analysis ($F = 3.32$, d.f. = 67, $p = 0.07$). Otherwise, a significant result could not be obtained (e.g. with all potential predictors included, $F = 0.94$, d.f. = 67, $p = 0.49$).

A logistic regression analysis was also performed. A model which retained as predictor variables the number of foreign languages, the number of years of foreign language study, and the strategy of focusing mainly on the target-language dialogues showed these factors had a somewhat statistically significant relationship with accuracy (deviance = 6.81, d.f. = 3, $p = 0.08$); likelihood ratio tests showed little difference among the strength of these three factors (χ^2 ranging from 1.11 to 1.29). A χ^2 goodness-of-fit test showed no reason to reject the logistic model ($\chi^2 = 2.50$, d.f. = 3, $p = 0.48$).

4.3.2. COMPREHENSION TEST. Using a general linear regression model to identify the contribution of each factor to the prediction of test accuracy on the *comprehension* test, we found that only the reading aloud and using mental imagery strategies could be retained in the analysis ($F = 3.15$, d.f. = 91, $p = 0.05$). Otherwise, no significant result was obtained (e.g., with all potential predictors included, $F = 0.93$, d.f. = 91, $p = 0.50$).

A logistic regression analysis was also performed on the comprehension test. A model which retained as predictor variables the number of foreign languages, the number of years of foreign language study, and the strategies of using mental imagery and focusing mainly on the target-language dialogues showed they had a statistically significant relationship with accuracy; the use of mental imagery was the strongest predictor in likelihood ratio tests ($\chi^2 = 6.93$, $p = 0.01$), the next-strongest factor being the total number of years of foreign language study ($\chi^2 = 4.83$, $p = 0.03$), after that, the number of foreign languages studied ($\chi^2 = 3.78$, $p = 0.05$) and the strategy of focusing on the target language dialogues ($\chi^2 = 2.80$, $p = 0.09$). A χ^2 goodness-of-fit test showed no reason to reject the logistic model ($\chi^2 = 3.29$, d.f. = 3, $p = 0.35$).

5. CONCLUSIONS. Number of years of foreign language study, number of foreign languages studied, and use of the study strategy of focusing on the target language dialogues showed up as factors on both the memory test and the comprehension test. Use of the mental imagery strategy during the study phase had no effect on accuracy in the memory test, but clearly had an effect on accuracy in the comprehension test.

The results of the experiment suggest that learners who prove successful in acquiring a certain degree of communicative ability in the absence of comprehensible input (Krashen 1985) may be different in that they use mental imagery while learning from texts. There is a puzzle which goes like this (originally based on a Zen koan):

Imagine you have a baby crane. You put it in a very large bottle and you feed it every day and give it water. It grows until finally it is an adult and it is too big to get out through the neck of the bottle. How do you get it out without injuring it and without breaking the bottle?

The answer is, of course, 'You imagined the crane *into* the bottle, so just imagine it *out*!' We believe that some learners escape the Chinese Room the same way we get the crane out of the bottle: they imagine their way out.

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- ¹ Saleemi (1992) reviews various work by Chomsky, Chomsky and Miller, Fodor, Pinker, Wexler and Culicover and others in which the assumption is repeatedly maintained. Chomsky still retains it (see Chomsky 2000 *passim*).
 - ² The need for using such input was necessary to eliminate any risk that subjects might be familiar with the input to which they were to be exposed. Têrus was created by Coleman from Polish input via a set of formulaic substitution operations.
 - ³ Recall that in the training and study phases subjects saw text and heard an audio recording but did not see the speakers or anything else in the setting. Thus, any visualization they performed was not from having seen a real event, but was comparable to that which learners might perform when studying a typical foreign language textbook.
 - ⁴ The part of 'Gova' was played by Adina Postica, one of the authors; both authors wish to thank Anastasia Mirzoyants (at the time this study was carried out, a master's student at the University of Toledo) for playing the role of 'Ava'.
 - ⁵ Initially, we had expected to be able to divide subjects into two groups on the basis of separate instructions—telling one group to use mental imagery and not giving any such directive to the other group. However, we found that there was no correlation between whether we had told them to use mental imagery and whether they actually reported having done so.

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UNMASKING METAPHORS IN URBAN PLANNING

JÚLIA TODOLÍ
Universitat de València

MONTserrat RIBAS
Universitat Pompeu Fabra

FOR A LONG TIME METAPHORS¹ were seen as a rhetorical device and more specifically as a matter of poetry. Today, however, many cognitive linguists and analysts of discourse recognize that metaphors structure our perception and understanding of reality and that we define our reality in terms of different kinds of metaphors and proceed to act on the basis of these metaphors:

When we signify things through one metaphor rather than another, we are constructing our reality in one way rather than another. Metaphors structure the way we think and the way we act, and our systems of knowledge and belief, in a pervasive and fundamental way. (Fairclough 1992:195)

Most of our metaphors have evolved in our culture over a long period, but many are imposed upon us by people in power, and people who get to impose their metaphors on the culture get to define what we consider to be true (Lakoff & Johnson 1980:159–160). One of the most salient metaphors we live by is the metaphor argument is war, which is why we often talk about arguments in terms of war. Although there is no physical battle, there is a verbal battle and the structure of an argument (attack, defense and counterattack) reflects this. Another salient metaphor *we live by* is the health metaphor, which is when we speak about abstract concepts in terms of body and health, therefore mapping onto these concepts some properties of animates or human beings and carrying out a kind of personification.²

But the most interesting thing is that both metaphors, the war metaphor and the health metaphor, have been related to each other for a long time. In the 19th and 20th centuries, for instance, medicine evoked military metaphors against disease to promote the idea that illness is an *enemy* to be *defeated* and to engage people in a common cause, namely, in a treatment focused on medications. Sontag (1989), for example, gathers an abundant supply of metaphors on the way we speak about illness in terms of war and shows how doctors, in their *crusade against cancer* and in order to *kill the cancer*, *bombard with toxic rays* and *chemical warfare*. And vice versa, military *operations* are seen as *hygienic*, as a means to *clean out* fortifications, and bombs are portrayed as *surgical strikes* to take out anything that can serve a military purpose (Lakoff 1991). Both metaphors, the war metaphor and the health metaphor, are still alive in our culture and have an important role in understanding complex matters such as foreign policy.

On the other hand, as Fairclough points out, disease metaphors are also used to talk about social unrest, portraying the status quo as the healthy situation and presenting other interests as attacks on the health of society as a whole. According to him:

[T]he ideological significance of disease metaphors is that they tend to take dominant interests to be the interests of society as a whole, and construe expressions of non-dominant interests (strikes, demonstrations and 'riots') as undermining (the health of) society *per se*. (1989:120)

He finally concludes that 'different metaphors imply different ways of dealing with things: one does not arrive at a negotiated settlement with cancer, though one might with an opponent argument. Cancer has to be eliminated, cut out' (*ibid*).

In recent decades the enterprise culture has spread out in both the health metaphor and the war metaphor and nowadays we talk about war and health in terms of business. The patients have turned into *clients* (Goldbloom 2003) and the war is seen as a transaction with *costs*, namely, casualties, and *gains* or well-being and security (Lakoff 1991). In our point of view, there is indeed a *hypermetaphor*, the business metaphor, invading both the metaphor of war and the health metaphor or overlapping them.

1. METAPHORS IN URBAN PLANNING.

1.1. HISTORICAL BACKGROUND. The *Plan for Restoring the Islamic Wall in Barri del Carme* (Valencia, Spain) allows us to show how the health metaphor and the business metaphor arise together and function as a powerful device of masking reality. The project, which was supposed to aim at the restoration of the Islamic Wall and the construction of some houses and public equipment, affected 200 people (40% of the population of the area) and anticipated the demolition of 16 buildings and the reuse of 17 construction sites. However, the real goal of the plan was to redevelop a residential area into a tertiary one by getting rid of the residents. The affected residents, who were neither asked nor informed of the plan while it was being drafted, gathered in associations, organized debates and round tables, launched awareness-raising campaigns for the citizens, wrote press articles and proposed an alternative plan that was sustainable and respectful towards both cultural heritage and neighborhood. Throughout the campaign they were anonymously menaced, their houses were bought and sold again three or four times by different building societies and their message was labeled as *protest song*. Eventually, in 2004, the plan was withdrawn and a new plan was put forward, which is respectful to most of the existing buildings and keeps the population. However, at the moment, the only activity that can be seen in the affected area is that of the estate agencies, who buy whole buildings, try to throw the inhabitants out through *estate mobbing* and resell these buildings for twice or three times the original purchase price.

1.2. DATA AND METHOD. In the following sections we focus on how architects and urban planners try to create realities and to mystify the impact their projects will have on the affected neighbors by means of metaphors. The data for this study consist of the urban project outlined

by the technical specialists, opinion articles from newspapers published from 2000 to 2005, round tables where architects, urban planners, archaeologists and residents have been discussing the project, and leaflets from campaigns organized by the residents' associations. These discourses are analyzed through a combination of critical discourse analysis (Fairclough 1992, 1995, 2003) and conceptual metaphor theory as used in cognitive linguistics (i.e. Lakoff & Johnson 1980, Kövecses 2002, Gibbs 1994 and 1999, and Steen 1999).

Our study differs from other research on metaphor. We adopt a language-in-use approach to metaphor, where language users are an integral part of the research. We emphasize the interactional aspects of metaphors to show how conventionalized metaphors and image metaphors are processed by speakers, since some scholars have pointed to the need to distinguish degrees of familiarity in metaphors processed by speakers (cf. Giora & Fein 1996 and Low 1999).

2. THE HEALTH METAPHOR. Conceptual metaphors are grounded in, or motivated by, human experience. According to Boers (1997:49), when there are various metaphors available to conceive an abstract concept, 'the likelihood of a given source domain being used for metaphorical mapping may be enhanced when it becomes more salient in everyday experience'. The bodily source domain is one of those experiences and one circumstance in which the awareness of one's bodily functioning is enhanced is when one gets ill. In our case (the Restoration of the Islamic Wall), the health metaphor arises as a powerful device to persuade people of the advantages and disadvantages of the plan and technicians and institutional representatives use this metaphor both to defend and attack the plan. The pro-project technicians, for example, establish a doctor-patient (and therefore an expert/non expert) relationship with the affected environment to justify the urban *operation*. This way, the proposed plan is seen in example (1) as a therapeutic solution, namely, as *sanitizing* by means of *delicate urban surgery*, although it entails the demolition of several buildings and the expulsion of their inhabitants:

- (1) La reordenación supone el *saneamiento* de una zona en declive social y económico mediante una *intervención delicada de cirugía urbana* que respeta y completa la edificación existente.

'The redistribution suggests the *sanitizing* of a district in social and economic decline through the *delicate application of urban surgery* that both respects and adheres to the existing environs.' (Project. Modificación del PEPRI del Carmen en el ámbito de la muralla musulmana 2002)

The anti-project technicians also use the health metaphor, but this time to make the affected residents aware of the side effects or consequences of the *operation*, namely, the expulsion of the affected inhabitants and the redevelopment of the neighborhood into a tertiary area. For the latter, the project is seen as a matter of *major surgery* (2), and more specifically, as a *lineal metastasis* which entails *extirpation* and *amputation of urban tissue* (3):

- (2) Pero es que además yo creo que viajan poco. Mejor dicho, viajan mal. Porque no son capaces de ver y de aprender lo que sucede en el resto de Europa donde ya hace algunos años se ha abandonado casi completamente las *operaciones de cirugía mayor*, la reestructuración contundente, una forma de intervenir que no es un caso aislado y que se ha aplicado de forma contundente todavía mayor cabe en el Cabañal.

'But, in addition, I think they travel little, or rather they travel badly. They are incapable of seeing and learning from what is happening in the rest of Europe where, some years ago, they almost completely abandoned the idea of *operations of major surgery*. That is to say, restructuring on an overwhelming scale, a widespread form of intervention that has been employed to drastic effect in the Cabañal.' (Fernando Gaja, Anti-project, Round Table)

- (3) Que aunque no se diga, la estrategia aplicada se basa en la llamada hipótesis de la *metástasis de línea* que formuló hace tiempo ya Oriol Bohigas. Una reestructuración *traumática*, de *amputación* y *extirpación* de *tejidos* urbanos.

'Although it is not acknowledged, the applied strategy is based on what is known as the *lineal metastasis* formulated in the 1950s by Oriol Bohigas, which consists of a *traumatic* restructuring, *amputation* and *extirpation* of urban *tissues*.' (Fernando Gaja, Anti-project, Round Table)

In examples (4), (5) and (6), the same anti-project representative maps the health metaphor onto the residents, who are referred to as *patients* (4) or as *sensitive tissues* (5), but also as *clients* (6), an example of the marketization of discourse (Fairclough 1992), to which we return in section 3.

- (4) Para los urbanistas más preclaros se trata de una *operación quirúrgica* que pretende matar al *paciente*. Ese *paciente* son el centenar de familias que tendrán que ser expropiadas de sus casas y la destrucción del tejido económico y social que mantiene vivo el barrio del Carmen.

'For the more enlightened and eminent urbanists it is about a *surgical operation* that tries to kill the *patient*. The *patient*, in this case, being the hundred families who would have their houses expropriated and would witness the destruction of the economic and social fabric that keeps the Barrio del Carmen (old town) alive.' (Reported speech from the newspaper *Pueblo*)

- (5) Creo que es importante, cuando se actúa en un *tejido tan sensible* como este, tener siempre presente el llamado principio de precaución y la irreversibilidad de las actuaciones. Las actuaciones urbanísticas en gran medida son irreversibles.

'I believe it is important, when one is working with *such sensitive tissue*, to always be aware of what is known as the caution principle and the irreversibility of the interventions. Urban interventions are largely irreversible.' (Fernando Gaja, Anti-project, Round Table)

- (6) Los vecinos no son un elemento pasivo de las actuaciones son el *cliente*, el *cliente* de estas actuaciones.

'The neighbors are not a passive element in the interventions, they are the *client*, the *client* of the interventions.' (Fernando Gaja, Anti-project, Round Table)

Thus, groups with different interests share the health metaphor at a general level but exploit it differently at the level of detail and make citizens perceive the planned urban intervention as a necessary measure to be taken, but also as an operation that can kill the patient and the square. It depends on the metaphors used to define the plan.

3. THE BUSINESS METAPHOR. Another example of naturalized metaphor we are hardly ever aware of is the business metaphor. As Fairclough (1992: 195) points out, people are not only quite unaware of it most of the time, but they find it very difficult to escape from this metaphor in their discourse practice. It is what he calls the marketization of discourse, which also entails a marketization of thought and practice. In the Plan for Restoring the Islamic Wall, the business metaphor is above all used by the pro-project party. The authors also talk about *costs* (namely, *social costs*) (7), *good business* (8) and the *excellent balance* (9) that can result from this *operation*.

- (7) La primera conclusión es la existencia de grandes espacios desocupados en la mayoría de los centros de las manzanas, lo que permite una intervención con un menor *coste social*.

'The first impression is one of large, unoccupied spaces in most of the inner courtyards of the blocks, which permits an intervention with lower *social costs*.' (Project. Modificaciones al PEPRI del Carmen en el ámbito de la muralla musulmana, 2002)

- (8) Esto es prueba de que entendieron que hacían un *buen negocio* con ello.

'This is proof that they [the affected residents of other plans carried out in the old historic quarter] viewed this as *good business*.' (Juan Pecourt, Pro-project, Levante-EMV, 16 March 2003)

- (9) Los desplazados no han tenido perjuicio. Por tanto, un *excelente balance*.

'The displaced have not been disadvantaged; consequently an *excellent balance*.' (Juan Pecourt, Pro-project, Levante-EMV, 16 March 2003)

But the most salient business word and indeed the alleged goal of the plan is to *assign worth* to the wall. The authors don't speak about recovering or restoring the wall, since the wall is really neglected, but they refer to the *operation* in terms of worth or value, as in (10):

- (10) Se trata de retomar, de *poner en valor* esos elementos arqueológicos. Y cuando se habla de *puesta en valor* de los elementos arqueológicos quiere decir que esos elementos arqueológicos [...]. Una *puesta en valor* de la arqueología no se trata de una rehabilitación de una pieza en medio de un parque de geranios sino que hay que meterla en un contexto de lo que ha supuesto esa pieza. Nosotros con la intervención conjunta de las cuatro manzanas lo que queremos hacer es *poner valor* a la existencia física del elemento.

'It's about *re-establishing the value* of archaeological elements. And when one talks of *re-establishing value* what it means [...]. *Assigning value* to archaeology is not about the rehabilitation of a particular object and placing it in the middle of a park of geraniums, but placing it within the context that gave the original piece its meaning. Through the intervention with the four blocks, what we want to do is *assign value* to the physical existence of the element.' (César Mifsut, Pro-project, Author, Round Table)

4. INTERPRETATION: CONCEPTUAL METAPHORS AND IMAGE METAPHORS. When one conceptual domain is understood in terms of another conceptual domain, we have a conceptual metaphor. These metaphors can be given by means of the formula *A is B* or *A as B* and they can be more or less conventionalized. Many of the metaphorical expressions we have talked about so far are fixed by convention and are examples of conventionalized metaphors or of what Lakoff and Johnson (1980) call 'metaphors we live by'. The metaphors *operation* and *assign value* used to designate the process of rehabilitating the wall, for example, are pervasive in all sorts of language and in all kinds of discourse, not just in language but also in thought and action. Some other metaphors, however, are limited to certain registers. This is the case of the linguistic metaphor *sanitizing*, which is used in urban planning to designate the process of increasing rents by getting rid of the residents or in corporate discourse to label the process of increasing gains by getting rid of employees, for instance. Although the real goal in both cases is the wish to increase gains, the aim is seen as therapeutic solutions to a disease, in which case the process would be taken for granted.

Other metaphors like *extirpation*, *amputation*, *metastasis* and *kill the patient*, for instance, which refer to the redevelopment of the area, are extensions of what we call the health metaphor. But they are emergent metaphors, they are more creative and their use is limited to certain texts, contexts, or speakers. These emergent or active metaphors are more pragmatic, since they are highly dependent on the context and have to do with language use and users in contexts.

In addition to these cases, which are part of whole metaphorical systems, there are also novel metaphors that are not based on the conventional mapping of one conceptual system onto another, but rather on one mental image being superimposed on another by virtue

of their similar appearance. They are therefore referred to by scholars as (*one-shot*) *image metaphors*, since, in them, we bring into correspondence two rich images for a temporary purpose on a particular occasion. A popular example is when we say that a woman has an hourglass figure. This involves mapping the image of an hourglass onto the image of a woman, fitting the middle of the hourglass to her waist (Lakoff & Turner 1989:89–91). These metaphors have been described as special ad-hoc cases. They stand alone and are not involved in everyday communication. Thus, language users will presumably make sense of them using processes specifically suited to this context, since they do not belong to their conventional repertoire.

We have found in our corpus some image metaphors. The most salient and polemical one is undoubtedly the use of an ecological disaster in Galicia, namely, the use of the word *chapapote* ('tar')³ to refer to the buildings leaning against the Islamic Wall, as in (11).

- (11) Esto solo se conseguirá con un cambio de imagen que se quite de encima el *chapapote* de la marca desarrollista y que busque el acuerdo de lo—necesariamente—actual con un pasado que hoy apenas se adivina.

'This will only be achieved through a change of image which does away with the *tar* of the developmental brand and which looks for an agreement of the—necessarily—current with a past that can now hardly be guessed.' (Juan Pecourt, Pro-project, Levante-EMV, 12 February 2003)

Another instance of what we see as an example of image metaphor is the use of the word *song of protest* in (12) to describe the claims of the residents, and therefore highlighting the idea that they are behind the times or are against progress.

- (12) Ha habido más reacciones: aguiluchos dibujados en las paredes que acechan a los vecinos, una falla que critica a la Administración con resonancias de *canción de protesta* de Ana Belén, llamadas al 'No nos moverán' etc.

'There has been more reaction: drawings on the walls with hawks threatening the residents, a *falla* [papier mâché satirical figure] criticizing the administration with echoes of the *song of protest* of Ana Belén, with its calls of We shall not be moved". (Juan Pecourt, Pro-project, Author, Levante-EMV, 16 February 2003).

Both metaphors are examples of what Steen (1999:94) calls degrading metaphors. But the most interesting one-shot image metaphors are those used in the urban register to hide the destruction of the urban layout. It is well known that redevelopments of neglected areas often lead to the demolition of buildings and the destruction of the urban layout by opening broader spaces. However, there is a strong regulation that forbids such destructive processes in the old town quarters, as these are the history of the city and have to be protected in order to preserve collective memory. Thus, urban planners try to avoid words such as *destruction* or *demolition*, and instead use metaphors like *esponjar* ('sponge'). Example

(13) is very interesting as the speaker, an anti-project representative, unravels these strategies of naming that aim at masking the reality.

- (13) *Que normalmente la confusión terminológica es síntoma de una confusión más grande. Las propuestas que se han hecho en Valencia, y también en Barcelona, de donde viene el modelo, se presentan a menudo como esponjamientos. No lo son en absoluto. A pesar de que se ha evitado la asunción de un término que las pueda identificar y definir, creo que este tipo de actuaciones se podrían agrupar bajo la denominación de reestructuración.*

'Normally, terminological confusion is symptomatic of a greater far-reaching confusion. The proposals for Valencia, like those for Barcelona, where they originated, are often described as 'spongings'. But they are absolutely not. Although these operations have proved resistant to a general identification and definition, I think that these types of projects can be labeled as restructuration.' (Fernando Gaja, Anti-project, Round Table)

The essence of a metaphor is that by mapping one concept (the topic) onto another (the vehicle) it necessarily highlights some meanings and hides some others, since metaphors set an equation between two meanings (the meaning of the topic and that of the vehicle) that resemble each other but are not identical. Thus, by using the word *esponjar*, for instance, architects and urban planners don't give an accurate picture of the topic, since this metaphor foregrounds the idea or process of opening spaces, which is congruent with the metaphor of the sponge, but hides the destruction of the historical urban layout and the expulsion of the residents that often precedes the opening of spaces, which is not congruent with the meaning of the vehicle (the sponge). In other words, urban metaphors, like other metaphors, can hide aspects of reality, by highlighting some contents and backgrounding some others. But in the area of urban planning metaphors matter more, because they constrain our lives and can lead to dehumanized neighborhoods, to quarters without residents, mostly called tertiary areas.

5. FINAL REMARKS. If metaphors structure the way we think and the way we act, it is reasonable to assume that metaphors play a central role in the construction of social reality and therefore they can change reality, construct consensus or public opinion. However, there are some differences in the way we perceive metaphors. Conventionalized metaphors, also called *inactive* or *dead metaphors* (Goatly 1997), are commonly assumed to be natural ways of naming a reality, as they are pervasive in all sorts of discourse and all languages. However, (one-shot) image metaphors and less conventionalized metaphors are not perceived as natural ways of naming and they can lead to discursive subversion. This is the case of the innovative metaphors *protest song* and *tar* drawn upon to describe the protest actions carried out by the residents and the affected buildings respectively. These metaphorical expressions led to the reactions in (14) and (15).

- (14) Al contrari, per part de l'equip redactor a la participació veïnal se li va anomenar *cançó de protesta*, a les accions de veïns li les va ratllar d'aldarull al carrer i davant la defensa legítima de les llars dels ciutadans se li va denominar *finques de xapapote*, i que no mereixien ser conservades.

'To the contrary, the editing team dismissed the neighbors' actions as *songs of protest*, their legitimate right to defend their houses as riots, and their buildings were described as *tar*, as fit only for demolition and not worth preserving.' (Josep Montesinos, Anti-project, affected resident, Levante-EMV, 28 February 2004)

- (15) Se ha llegado a utilizar el término '*chapapote*' para definir esas construcciones posteriores, término que quiere buscar un paralelo—desde nuestro punto de vista desafortunado—en otro problema totalmente distinto.

'The term "*tar*" has now come to be used to define those constructions to follow, a term that wants to find a parallel—from our point of view, not appropriate—with a totally different problem.' (Press announcement from the 'Colegio de arqueólogos' of Valencia)

And the same happened in the case of extension metaphors such as *delicate surgery*. While the term *operation* is assumed as a natural way of naming the redevelopment of the affected area, the expression *delicate surgery* had a subversive effect and aroused a set of discursive reactions, as shown in (16), (17) and (18):

- (16) Somos conscientes de la mayor dificultad gestora, que no económica, que implica optar por la *cirugía menor* y el diálogo y compromiso de los vecinos.

'We are aware of the major management difficulty, not of an economic kind, which implies opting for *minor surgery* and the dialogue and compromise of the neighbors.' (Miguel Ángel Piqueras, Anti-project, Residents' association "Amigos del Carme", Levante-EMV, 21 February 2004).

- (17) Que aunque no se diga, la estrategia aplicada se basa en la llamada hipótesis de la *metástasis de línea* que formuló hace tiempo ya Oriol Bohigas. Una reestructuración *traumática*, de *amputación* y *extirpación* de tejidos urbanos.

'Although it is not acknowledged, the applied strategy is based on what is known as the *lineal metastasis* formulated in the 1950s by Oriol Bohigas, which consists of a *traumatic* restructuring, *amputation* and *extirpation* of urban tissues.' (Fernando Gaja, Anti-project. Round Table)

- (18) Se trata de trabajar con el *bisturí*, con el *cinzel*, y dejar para otros menesteres el *cuchillo del carnicero*

'It is about working with the *scalpel*, with the *chisel*, and leaving the *butcher's knife* for other activities.' (Jorge Palacios, Anti-project, affected resident, Levante-EMV, 30 March 2003)

Thus, instead of constructing consensus, one-shot image metaphors or less conventionalized metaphors can have a subversive effect as in poetry, where the reader does not remain indifferent to the images being mapped. On the other hand, conventionalized metaphors function as presuppositions. They are not contested and do not inspire the opponents to counterattack or show disagreement. Put in other words, subjects are more likely to process familiar metaphors directly, while less familiar metaphors are more likely to invoke the constructional or non-metaphorical meaning of the expression and therefore they can arouse discursive reactions. All in all, if one measure of their social importance is the extent to which metaphors are contested, open to struggle and transformation, we have to acknowledge that metaphors are powerful devices of constructing public opinion.

- ¹ Research for this article has been undertaken as part of the Project GV05/213, funded by the regional government of Comunitat Valenciana (Valencia, Spain). For more publications on the same topic see Labarta and Dolón (2005) and Todolí (2005).
- ² Kövecses (2002:50) points out that 'personification permits us to use knowledge about ourselves to comprehend other aspects of the world, such as time, death, natural forces, inanimate objects, etc.'
- ³ The term *chapapote* refers to the oil spill that reached the coast of Galicia (north-western portion of Spain) and caused important environmental damage to the coastline.

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A STUDY OF LANGUAGE IDENTITY AND SHIFT: THE CHRISTIAN REFORMED CHURCH DUTCH OF WEST MICHIGAN

KARA VANDAM

University of North Carolina-Chapel Hill & Kaplan University

EINAR HAUGEN'S 1969 STUDY, *The Norwegian Language in America: A Study in Bilingual Behavior*, opened a new phase of sociolinguistic research as it investigated how an immigrant community grappled with issues of language and identity, and how both language and identity changed for the group over time. Many linguists have since investigated other immigrant communities following Haugen's lead. This paper builds on the work of Haugen and others who have explored the lives of many generations of immigrants.

The large Dutch immigrant settlement of West Michigan, known as the *kolonie*, began in the mid-nineteenth century and culminated in the years 1916–1920. The *kolonie* had an early religious split, one that evolved into the present-day Reformed Church of America (RCA) and Christian Reformed Church (CRC); these two groups took a very different view of language and identity, with one group, the CRC, very intentionally preserving Dutch as their primary language for decades (ten Harmsel 2002, Brinks 1995, Melton 1996). They were straightforward about their intentions: the Dutch language was the critical identity marker of both their ethnicity and religion. Yet in roughly the span of a decade, they gave it up. My research indicates that the CRC Dutch of West Michigan relinquished Dutch because of anti-German and by extension anti-‘other’ sentiment and an upsurge in nativist politics in the period during and immediately after World War I.

Haugen's 1969 study on bilingualism and language shift among Norwegians in America found similar patterns of religion, identity, and language shift, as well as influence from anti-German sentiment and WWI-era nativist politics. Haugen found a gradual shift in Norwegian speech communities, but the West Michigan shift appears more rapid, in the span of a decade. Like the CRC Dutch, the early Norwegian Lutheran churches placed great value on the preservation of the mother tongue due to their belief in its strong correlation to faith. Haugen (1969) points out that their attitudes did not escape criticism in the wider community, and in this way, they did differ from the CRC Dutch. In the Norwegian community, the church felt itself to be the sole voice in the fight to preserve the language. A physician of the community, writing in the *Friheds-Banneret* stated this sentiment clearly:

[The clergy and church] wish to continue here as in Norway to hinder the enlightenment of the people, to preach incomprehensible traditions as infallible truths, and deny the children of Norwegians the right to go to American schools before they are confirmed. (Haugen 1969:39)

Efforts to establish Norwegian language schools failed. Norwegian immigrants prided themselves in their ability to learn English quickly. Persistence of the Norwegian language was seen largely among recent immigrants and in the church.

This paper will first present an overview of 19th-century Dutch migration to the United States and the founding of the West Michigan *kolonie*. It will then turn to the cultural and sociolinguistic impact of religious schism and ethno-religious loyalty. Finally, it will consider issues of bilingualism, language change, and language loss in the two communities both pre-1910 and in the period from 1910–1920.

1. NINETEENTH CENTURY MIGRATION AND THE FOUNDING OF THE WEST MICHIGAN *KOLONIE*. The Dutch have been coming to the United States since the 17th century. The migration over the past four hundred years has, however, been anything but steady. Doezema (1979) identifies three waves, each driven by different factors: the Commercial Expansion (17th century), the Great Migration (mid-19th century to early 20th century), and the Planned Migration (post World War II). In the years discussed in this study (1847–1920), 90% of all Dutch emigrants came to the United States, for a total of over 273,000 Dutch during this period (Swierenga 2000), many encouraged by letters written by past immigrants and by the state of Michigan itself (Brinks 1983).

Migration was driven by two religious events. The first motivating factor was changes to the constitution enacted by William I of the Netherlands in 1816 which—among other things—instructed Dutch Reformed ministers that they could ignore the Calvinist creeds of ‘original sin, predestination, virgin birth, divine inspiration of Scripture, and Christ’s atonement for sins’ (Vanderstel 1983:101). As Smits (1983) explains, this shift in doctrinal freedom signaled to the more conservative members of the church that the new church of William I was no longer the true church, and their secession from it (hence their frequent title of *Seceders*) marked a reformation of it. While only two percent of the population of the Netherlands was made up of *Seceders*, they constituted over half the Dutch immigrants to the United States (ten Harnsnel 2002). The second was a power struggle which took place some thirty years later among the *Seceders*. Among the ministers who lost and who were then subsequently driven out were A. Van Raalte and H. Scholte.

Van Raalte led the first migration and founded the town of Holland, Michigan in 1846 with 1000 followers. Scholte led 700 followers to found Pella, Iowa. Other ministers and their congregations followed. They settled in groups, purchasing all available nearby land in order to build tight-knit communities devoid of outsiders, choosing unpopulated areas ‘nearly void of institutions’ (Brinks 1995:2), ‘designed to encourage ethnic isolation as a strategy for preserving family values and religious precepts’ (Brinks 1995:2). They established schools, shops, newspapers, and churches. Some left these enclaves for the nearby established town of Grand Rapids. One would think, Holland, Michigan and Pella, Iowa would have had the perfect set-up for maintaining the Dutch language; however, Van Raalte’s and Scholte’s groups would be the first to lose it. Significantly, they lost the Dutch language before those in Grand Rapids, a community in which the Dutch were a minority.

Grand Rapids was an established town just twenty miles from Holland. Grand Rapids had 16,000 residents in 1870 (U.S. Bureau of the Census 1923): over 3000 were native

Netherlanders (Brinks 1995). At the turn of the twentieth century, forty percent of the residents of Grand Rapids identified themselves as Dutch (ten Harmsel 2002). In 1920, a quarter of its 140,000 residents were native Dutch speakers. Only a third of these were actually foreign-born (Vanderstel 1983), a testament to the strength of the Dutch language's persistence in the area. This is in sharp contrast to Holland, which was English-speaking by the 1870s. Grand Rapids shopkeepers learned enough Dutch to be able to communicate with and attract the new clientele (Vanderstel 1983). Gerrit Roelofs (Roelofs Verbrugge 1994:61), an immigrant to Grand Rapids in 1871 at the age of eighteen, had no difficulty communicating in Grand Rapids even though he lacked English, as one-fifth of the city 'was a Hollander'.

Dutch-language newspapers and publications flourished, and included *De Paarl* (1858–1860), *De Verzamelaar* (1860–1865), *De Hollander* (1851–1895), *De Hope* (1865–1933), *De Christen Werkman* (1892–1894), *Een Stem des Volks* (1893–1900) and *Stemmen uit de Vrije Gemeende* (1880–1920) as did Dutch-founded schools and colleges, including Hope College (Holland, Michigan) and Calvin College (Grand Rapids, Michigan).

2. THE CULTURAL AND SOCIOLINGUISTIC IMPACT OF RELIGIOUS SCHISM AND ETHNO-RELIGIOUS LOYALTY. The *kolonie* and its many congregations, under the leadership of Van Raalte, quickly aligned with the Dutch Reformed Church (Reformed Church of America) originally founded by Peter Stuyvesant in New York in the 17th century (ten Harmsel 2002), a church that after the Revolutionary War discouraged holding onto the Dutch language (Swierenga 2000) and encouraged assimilation into American society at large.

Not every member of the greater *kolonie* felt as van Raalte and his followers did. Many of the more rural Dutch immigrants along with those who had settled in Grand Rapids were alarmed by this rapid movement towards assimilation. These Dutch immigrants saw themselves as very different from other immigrants coming to the American melting pot. They—unlike their perception of other immigrants—had not come for economic opportunity, though they certainly did find that. They came to establish a Dutch Calvinist community with close ties to the homeland. They did not want to stop being Dutch: they simply were not willing to live in a Dutch society they saw as too tolerant, too progressive and breaking from tradition. In 1857, one of the ministers, Gysbert Haan, broke his congregation away from the RCA; other congregations followed, and the Christian Reformed Church, or CRC, was formed.

While the CRC and RCA split involved many theological differences, at the root was what the CRC characterized as 'worldiness' on the part of the RCA: To the CRC, the RCA had rejected its roots, specifically its Dutch roots, and had been Americanized. While the RCA did and would certainly still reject this claim, in many significant ways they had Americanized, and the most obvious was the ready adoption of the English language.

3. BILINGUALISM IN THE TWO COMMUNITIES: PRE-1910 AND 1910–1920. English was adopted quickly in RCA-dominated Holland, Michigan, and it was the *de facto* language of the community by the late 19th century. The Dutch newspapers appeared side-by-side an English version, and before long there were few Dutch papers left in Holland. Holland

Academy, now Hope College, brought in English teachers early on, as did the primary schools of the area (ten Harmsel 2002). Further, RCA members supported the formation of public, state-run schools, in contrast to the CRC's (still current) belief that only CRC parochial schools should be allowed for parishioners' children.

The CRC understood the economic importance of learning English and certainly did nothing to prevent its members from doing so, but the church held fast to its own use of Dutch. For example, Grand Rapids' Ninth Reformed Church, organized in 1892, kept detailed minutes of all church meetings and business. These appear exclusively in Dutch from the church's founding until June 1, 1920 (cf. *Joint Archives of Holland*, record w02-1277.5). The first Dutch church in the *kolonie* has a very interesting linguistic history: van Raalte's First Church was an RCA church until 1882 (van Raalte died in 1876), at which point it seceded from the RCA for the same reasons that the CRC did and re-affiliated itself with the CRC (cf. the Pillar Christian Reformed Church history). Its records were kept in Dutch until World War I (Bratt 1993). As it is part of this paper's contention that the World War I nativist movements were responsible for the CRC assimilation from Dutch to English, these dates are significant. The first CRC publisher of note, Eerdmans Publishing, was founded in 1911 and published in Dutch until the late 1910's as well.

The CRC's Americanization movement came into full force in the years immediately before World War I. The first English Psalter appeared in 1914. The official CRC publication, *The Banner*, was first published as the English translation of the longstanding *De Wachter* in 1915. Looking outward to the American Christian communities for the first time, the CRC affiliated itself with the Federal Council of Christian Churches in 1918. Knowing that it needed to increase its presence, it opened its first printing plant house in 1919 (CRC of North America, <http://www.crcna.org>), printing largely in English. And in 1920, the CRC launched its first missions, in China and India. The CRC had become distinctly American.

The Americanization was not limited to the church. Dutch CRC families who had maintained their linguistic tradition for decades also opted for a switch to English in this decade. The case of Gerrit Roelofs is instructive. As mentioned above, he immigrated to Grand Rapids in 1871 at the age of eighteen and found no difficulty communicating, though he lacked English. Roelofs became a member of the Tweede Gereformeerde Gemeente (Second Reformed Congregation) of Grand Rapids, a Dutch-speaking CRC church, and met his wife, Mary, also Dutch and Dutch-speaking. Roelofs hoped to establish himself in business and recognized the business importance of English, so he took classes and learned English. Importantly, however, the language of his home was still Dutch, and as his business grew, he did not lose the need to conduct much of his business in Dutch. In 1893, he founded, edited, and published *Een Stem des Volks* (*A Voice of the People*), a pro-temperance paper. Articles were submitted by community members and covered community issues.³ Local English-speaking businesses placed ads assuring the availability of Dutch-speaking clerks to assist Dutch speakers. Even as late as 1907, Roelofs comments to his cousin, that he has hired a new young woman to work in his office. He is pleased that she speaks and understands Dutch because this is still needed with many of his customers (Roelofs Verbrugge 1994).

Roelofs' first wife died in 1911 and he remarried in 1912. His second wife, Nellie, did not speak English, but he instructed her to learn it. His letters to her from 1912–1915 are in

Dutch, but starting in 1916 the letters switch to English. This in itself is significant: while immigrant language shift is not uncommon, for a couple whose native language is Dutch to shift to a new language even with each other is novel. The couple had two children. Roelofs died in 1919 and his second wife remarried quickly. She and her second husband, also Dutch and a native Dutch speaker, had a largely English-speaking household. Nellie's mother never learned English and so complained frequently of not being able to understand anyone.

Roelofs Verbrugge's story is the rule rather than the exception. All signs point to a strong Dutch linguistic community which disintegrates abruptly with World War I. Another immigrant from 1908, this one a twenty-two year old, reminisced about a discussion that had taken place in her church women's group in the 1910s when some of the younger members raised the idea of an English-language bible study group: 'And one of the ladies in the [pro-] Dutch group said, "But in heaven they will have to speak Dutch so what would be the point of learning English?"' (Sinke 2002:183).

Haugen found a gradual shift in Norwegian speech communities, but the West Michigan shift is more rapid, over a single decade. Perhaps the most compelling evidence for this abrupt shift comes from 1920. As already established above, that was the year that CRC policy ceased to take its direction from the old Gereformde Netherlandic church, and the year that the minutes of the Ninth Reformed Church ceased to be kept in Dutch. It was the year *Stemmen uit de Vrije Gemeende* ceased publication and the year that the CRC launched its first missions, a decisive turn towards Americanization. On November 29, 1919, just one month prior to 1920, the Eastern Avenue Christian Reformed Church, the largest Dutch church in Grand Rapids, adopted English. *The Grand Rapids Herald* (29 Nov 1919:3) reported at the time that this was 'another triumph for the Americanization element now working in the Christian Reformed Church'. It was also the year a young Dutch immigrant placed two personal ads in the Dutch newspaper *De Hollandsche Amerikaan*. The first ad, in Dutch, simply said that he 'would like to meet a simple, understanding, and good-hearted girl. No specific denomination'. Two weeks later, he placed a second ad in the same paper, this time in English, whose verbosity not only suggests the greater prestige of English, but reveals his interest in sounding much more sophisticated and intellectual:

A naturalized Hollander, 26 years old, mechanic, would like to become acquainted with a girl or lady of from 22 to 27 years, who will form a congenial intelligent companion. Simplicity instead of arrogance desired. Religion no exigency... (Sinke 2002:190).

Jacob van Hinte, a doctoral student from the Netherlands, spent 1921 in America conducting research for what would become his 1928 doctoral dissertation, *Nederlanders in Amerika*. In it he discusses young Dutch women in Grand Rapids, and says they refuse to or cannot speak Dutch (Van Hinte 1928, cited in Sinke 2002).

4. ANTI-GERMAN SENTIMENTS AND NATIVIST MOVEMENTS PROMOTE LANGUAGE SHIFT. Many external and internal factors contributed to the CRC's rapid language shift.

Anti-immigrant sentiment strengthened in the United States in the 1910s and 1920s and resulted in a restriction of immigration to the United States. Linguistic policies mandating English be taught in schools were put in place by many states. The 1906 Nationality Act made English competency a prerequisite for citizenship (Wardhaugh 1987).⁴ President Woodrow Wilson often preached assimilation with statements like this one his 1915 'Address after some Naturalization Ceremonies':

And while you bring all countries with you, you come with the purpose of leaving all other countries behind you—bringing what is best of their spirit, but not looking over your shoulders and seeking to perpetuate what you intended to leave behind in them... You cannot become thorough Americans if you think of yourselves in groups. America does not consist of groups. (Andre 1996:92)

The CRC and other immigrant communities that had felt secure in their group identity were put on notice in the 1910s that this was going to change.

Big business feared the growing power of labor, seeing its revolutionary potential elsewhere. In 1912, textile workers in Massachusetts went on strike. Their union, the Industrial Workers of the World, translated materials into twenty languages. Henry Ford began to require his foreign-born factory workers to take English classes. Frances Kellor, an outspoken advocate of Americanization and United State industry, wrote,

Strikes and plots that have been fostered and developed by un-American agitators and foreign propaganda are not easily carried on among men who have acquired, with the English language and citizenship, and understanding of American industrial standards and an American point of view. (1916, cited in Crawford 1996:1)

Many non-German ethnic groups were targeted by anti-German sentiment, including Norwegian Americans, Swedish Americans, and Dutch Americans. There was some loose basis for this conflation beyond a shared Germanic heritage. In the case of Norwegian immigrants, the connection was a similar Lutheran affiliation (Haugen 1969). In the case of the Dutch immigrants of West Michigan, most had initially sided with the Germans when World War I began.

The situation was far worse for the CRC Dutch than for those in the RCA of Holland, Michigan. Not only did the CRC Dutch face discrimination from the non-Dutch community, they were harshly criticized by the RCA for their 'lack of true Americanism'. Both the RCA and other groups felt that the CRC's 'use of the Dutch language in schools and churches aroused suspicions of lack of patriotism' (Doezema 1979:xviii). Some of the attacks were verbal; others were physical and ranged from the relatively minor practice of unsolicited American flags being placed on CRC churches to the burning of a CRC church and school. The 'ethnic ascendancy and solidarity' of the CRC Dutch were shattered, and they quickly 'fell victim to the strident nativism of the time, particularly because the public often confused them with Germans' (*ibid*).

Sadly, in the span of a decade, this long-vibrant language had gone the way of so many immigrant languages. Dutch had become the language of punishment and the 'secret language of parents' and a language associated 'with spankings' (Sinke 2002:191). Thus in the end, despite its resiliency in the 19th century, its story is another one of language loss.

- ¹ The CRC still operates the largest primary and secondary Christian school network in the United States (Lippy & Williams 1988). Calvin College, the CRC's primary institution of higher learning still requires its faculty to send their K-12 children to CRC schools (Calvin College Faculty Membership Requirements, <http://www.calvin.edu/admin/provost/facdoc/fac-requirements.htm>), though a recent exception has been made for some African American faculty who wish to send their children to schools which have a more racially diverse population than the CRC schools. The exception is unavailable for other faculty with the same desire.
- ² Renamed Pillar Christian Reformed Church in 1984.
- ³ *Een Stem des Volks* was published until 1900. In that year, the Prohibition Party lost soundly, leaving Roelofs to believe his cause was before its time and not presently popular enough to sustain the paper (Roelofs Verbrugge 1994).
- ⁴ For feelings about multiculturalism and nationalism to sway as if on a pendulum is not odd. It has occurred repeatedly throughout the history of the United States.

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